dbx® PROFESSIONAL PRODUCTS

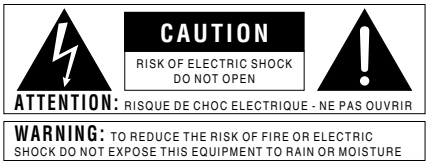
ZonePRO
Digital Zone Processor

640/641

A Harman International Company

User Manual

IMPORTANT SAFETY INSTRUCTIONS


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR
WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC
SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE MUST BE EARTHED. CONNECT ONLY TO A MAINS SOCKET OUTLET WITH PROTECTIVE EARTHING CONNECTION.

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the units chassis.

CONDUCTOR		WIRE COLOR	
		Normal	Alt
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN/YEL	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

WARNING FOR YOUR PROTECTION
READ THE FOLLOWING:

KEEP THESE INSTRUCTIONS

HEED ALL WARNINGS

FOLLOW ALL INSTRUCTIONS

DO NOT USE THIS APPARATUS NEAR WATER

CLEAN ONLY WITH A DRY CLOTH.

DO NOT BLOCK ANY OF THE VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.

ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Use only with the cart stand, tripod bracket, or table specified by the manufacture, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Refer all servicing to to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

POWER ON/OFF SWITCH: For products provided with a power switch, the power switch DOES NOT break the connection from the mains.

MAINS DISCONNECT: The plug shall remain readily operable. For rack-mount or installation where plug is not accessible, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated into the electrical installation of the rack or building.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

MULTIPLE-INPUT VOLTAGE: This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel or equivalent.

This Equipment is intended for rack mount use only.

IMPORTANT SAFETY INSTRUCTIONS

ELECTROMAGNETIC COMPATIBILITY

This unit conforms to the Product Specifications noted on the **Declaration of Conformity**. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Operation of this unit within significant electromagnetic fields should be avoided.

- use only shielded interconnecting cables.

U.K. MAINS PLUG WARNING

A molded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. **NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET.** Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and MUST be ASTA approved to BS1362.

DECLARATION OF CONFORMITY

Manufacturer's Name: dbx Professional Products
Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, USA

declares that the product:

Product name: dbx 640 and dbx 641
Note: Product name may be suffixed by the letters-EU.

Product option: None

conforms to the following Product Specifications:

Safety: IEC 60065 (1998)

EMC: EN 55013 (1990)
EN 55020 (1991)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC as amended by Directive 93/68/EEC.

Vice-President of Engineering
8760 S. Sandy Parkway
Sandy, Utah 84070, USA

Date: February 6, 2004

European Contact: Your local dbx Sales and Service Office or

Harman Music Group
8760 South Sandy Parkway
Sandy, Utah 84070 USA
Ph: (801) 566-8800
Fax: (801) 568-7583

Introduction

0.1 Defining the Zone Pro 640/641 ii
0.2 Service Contact Info iii
0.3 Warranty iv

Section 1 - Getting Started

1.1 Rear Panel Connections 2
1.2 (640)Front Panel 3
1.3 (641)Front Panel 3
1.4 Connections 4
1.4 PC GUI Installation 4

Section 2 - Software Operation

2.1 Zone Pro Philosophy 6
2.2 Views 6
2.3 Connections 6
2.4 Online/Offline 7
2.5 Configuration 7
2.6 Editing 7
2.7 Saving and Recalling Scenes 8
2.8 Meters 8
2.8 Saving Files 8

Section 3 - System Setup

3.1 Overview 10
3.2 Configuration Wizard 10
3.3 Scene Wizard 14
3.4 Schedule Wizard 15

Section 4 - Detailed Parameters

4.1 Input 18
4.2 Input EQ 18
4.3 Automatic Gain Control (AGC) 19
4.4 Notch Filters 20
4.5 Compressor 21
4.6 Noise Gate 23
4.7 De-Esser 24
4.8 Advanced Feedback Suppression (AFS) 25
4.9 Router 27
4.10 Auto Warmth 28
4.11 Band Pass Filter/Crossover 29
4.12 Output PEQ 30
4.13 Output Dynamics 30
4.14 Delay 32
3.15 Output Polarity 32

Section 5- Application Guide

5.1 Retail Establishment 34
5.2 Restaurant Install 36
5.3 Health Club 38
5.4 Night Club 40

Appendix

A.1 Factory Reset/Flash Update 44
A.2 Specifications 45
A.3 Block Diagram 46
A.4 Link I/O 47
A.5 Zone Controller Wiring and Install 48

640/641

INTRODUCTION

INTRO

CUSTOMER SERVICE INFO

Defining the ZonePro

WARRANTY INFO

dbx®
PROFESSIONAL PRODUCTS

INTRODUCTION

Congratulations on your purchase of the dbx® ZonePro 640 and/or 641! The dbx ZonePro processor was designed to provide Installers with programmable system processing along with dbx's Advanced Feedback Suppression (AFS™) algorithm for superior system control and performance. The ZonePro products have been created to provide state-of-the-art signal processing for Background Music applications, while maintaining a simple, secure and intuitive interface. From the powerful DSP modules to the multiple control interfaces, the ZonePro products provide all the processing and control necessary for permanent BGM installations. Additionally, the GUI interface allows any contractor to quickly set up and optimize the unit to its full potential by streamlining the setup process and providing a menu based setup procedure that includes system setup and configuration.

This manual will be your guide to understanding the full functionality of the powerful ZonePro units By combining the different components, the configuration possibilities are limitless. After you have become familiar with the unit, we encourage you to experiment and find the most effective and efficient way to run your system by utilizing the powerful processing of the ZonePro 640 and 641.

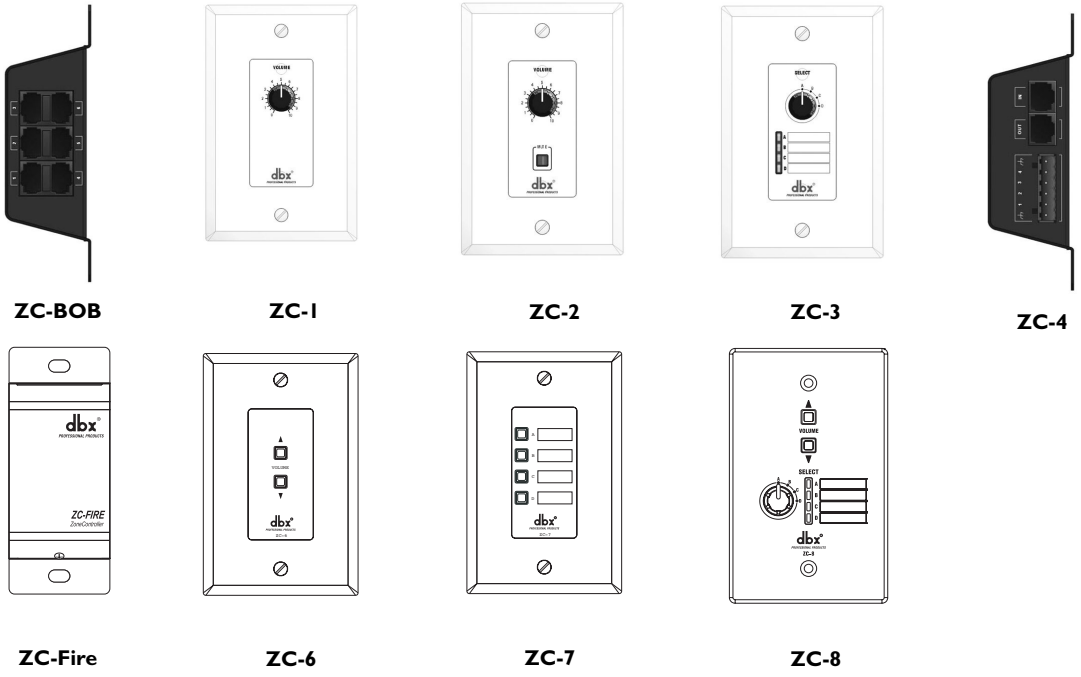
0.1 - Defining the ZonePro System

The dbx ZonePro units are the most effective way to manage all aspects of BGM processing and signal routing. The ZonePro essentially becomes the only device that you will need between the mixer and the power amps. The following are just some of the features of the ZonePro units.

ZonePro features:

System Setup Wizard
RS-232 PC GUI Control
Advanced Feedback Suppression (AFS™)
Compression
Limiting
Auto Gain Control
Noise Gate
De-Esser
Ducker
Parametric EQ
Bandpass and Crossover Filters
2.6 Seconds of Delay
Mic/Line Inputs
Programmable Wall Panel Controllers
Security Lockout

In addition to the amazing menu of processing available, the ZonePro units also afford you the luxury of utilizing dbx Zone-Controller series wall-mounted control panels that will allow you to remotely control various parameters of the unit. The ZC-1 and ZC-6 offer remote programmable Volume control to any installation using the ZonePro units. The ZC-2 provides programmable Volume and Mute control. The ZC-3 and ZC-4 allow Source selection, Scene selection or Page steering. ZC-FIRE provides an interface for fire safety systems. The ZC-7 remote offers page steering from a programmable push button interface. The ZC-8 provides a single panel with both push button volume control and source or scene selection. Up to 12 Zone Controllers can be used with a single ZonePro, and can either be wired in series or parallel. The ZC-BOB was created to accommodate "home-run" or parallel wiring to the unit. With a maximum length of 1,000 ft., the Zone Controllers offer a simple way to create a simple yet elegant solution to many installation applications.



ZC-BOB **ZC-1** **ZC-2** **ZC-3** **ZC-4**

ZC-Fire **ZC-6** **ZC-7** **ZC-8**

0.2 - Service Contact Info

If you require technical support, contact dbx Customer Service. Be prepared to accurately describe the problem. Know the serial number of your unit - this is printed on a sticker attached to the top panel. If you have not already taken the time to fill out your warranty registration card and send it in, please do so now.

Before you return a product to the factory for service, we recommend you refer to the manual. Make sure you have correctly followed installation steps and operation procedures. If you are still unable to solve a problem, contact our Customer Service Department at (801) 568-7660 for consultation. If you need to return a product to the factory for service, you MUST contact Customer Service to obtain a Return Authorization Number.

No returned products will be accepted at the factory without a Return Authorization Number.

Please refer to the Warranty information on the following page, which extends to the first end-user. After expiration of the warranty, a reasonable charge will be made for parts, labor, and packing if you choose to use the factory service facility. In all cases, you are responsible for transportation charges to the factory. dbx will pay return shipping if the unit is still under warranty.

Use the original packing material if it is available. Mark the package with the name of the shipper and with these words in red: DELICATE INSTRUMENT, FRAGILE! Insure the package properly. Ship prepaid, not collect. Do not ship parcel post.

0.3 - Warranty

This warranty is valid only for the original purchaser and only in the United States.

1. The warranty registration card that accompanies this product must be mailed within 30 days after purchase date to validate this warranty. Proof-of-purchase is considered to be the burden of the consumer.

2. dbx warrants this product, when bought and used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.

3. dbx liability under this warranty is limited to repairing or, at our discretion, replacing defective materials that show evidence of defect, provided the product is returned to dbx WITH RETURN AUTHORIZATION from the factory, where all parts and labor will be covered up to a period of two years. A Return Authorization number must be obtained from dbx by telephone. The company shall not be liable for any consequential damage as a result of the product's use in any circuit or assembly.

4. dbx reserves the right to make changes in design or make additions to or improvements upon this product without incurring any obligation to install the same additions or improvements on products previously manufactured.

5. The foregoing is in lieu of all other warranties, expressed or implied, and dbx neither assumes nor authorizes any person to assume on its behalf any obligation or liability in connection with the sale of this product. In no event shall dbx or its dealers be liable for special or consequential damages or from any delay in the performance of this warranty due to causes beyond their control.

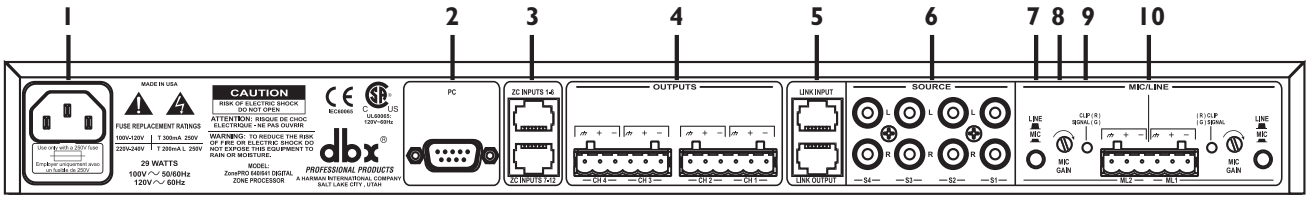
ZonePro™

Section 1

Getting Started

dbx®
PROFESSIONAL PRODUCTS

1.1 - Rear Panel (640 and 641)



1. IEC Power Cord Receptacle

The ZonePro 640/641 comes with a power supply that will accept voltages ranging from 100V-120V at frequencies from 50Hz-60Hz. An IEC cord is included. EU version accepts 220V-240V at frequencies from 50Hz-60Hz.

2. PC Connection

This DB-9 connection is used to communicate to the PC GUI and uses RS-232 protocol. This connection requires a Null Modem cable and one is included with the ZonePro unit.

3. Zone Control Inputs 1-12 (RJ-45 connector type)

This input connection is used to send information and power to the ZC wall controllers.

4. Outputs Channels 1-4

The output section of the ZonePro offers four electronically balanced Euroblock connectors.

5. Input Link Buss (RJ-45 connector type)

The ZonePro offers an input buss that duplicates inputs from one unit to the next for applications requiring more than four output zones.

6. Input Source Channels 1-4

The input section of the ZonePro offers four mono-summing unbalanced RCA connectors.

7. Line/Mic Selector

This switch is used to select either a line or microphone input.

8. Signal/Clip LED

This LED is used to indicate microphone signal input or clip.

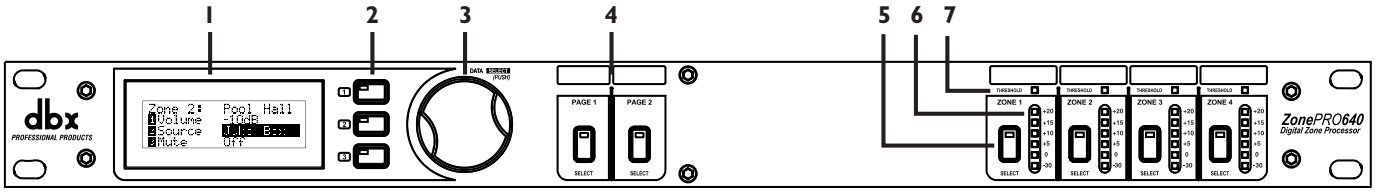
9. Mic Gain Control

This knob is used to set the input gain for the microphone input.

10. Mic/Line Inputs 1-2

The input section of the ZonePro provides two Euroblock connectors for mic/line inputs.

1.2 - Front Panel (640)



1. LCD Display

The backlit LCD display of the ZonePro 640 provides the end-user with all the necessary controls including source selection, page steering, zone volume and mute.

2. Parameter Select 1-3

These three buttons (when pressed) are used in conjunction with the Data Wheel to select and edit parameters.

3. Data Wheel

The Data Wheel is used to edit parameter values.

4. Page Buttons 1-2

The Page buttons are used to adjust the page signal path and can be used to steer paging to selected zones.

5. Zone Select

These buttons are used to select output zones for front panel control.

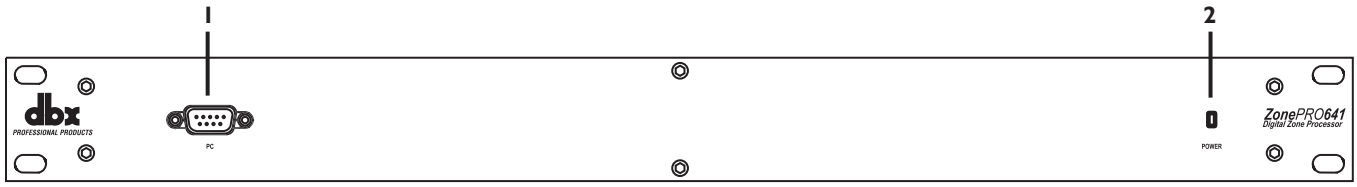
6. Output Meters

The ZonePro 640 provides the user with four independent six-segment Lightpipe output meters that range from -30 to +20 dBu. These meters monitor the signal level directly before the D/A converter.

7. Threshold Meters

The threshold meters indicate that the threshold level has been exceeded within the output Compressor, Auto Gain Control, or Limiter sections, and gain reduction may be taking place within the specific output channel.

1.3 - Front Panel (641)



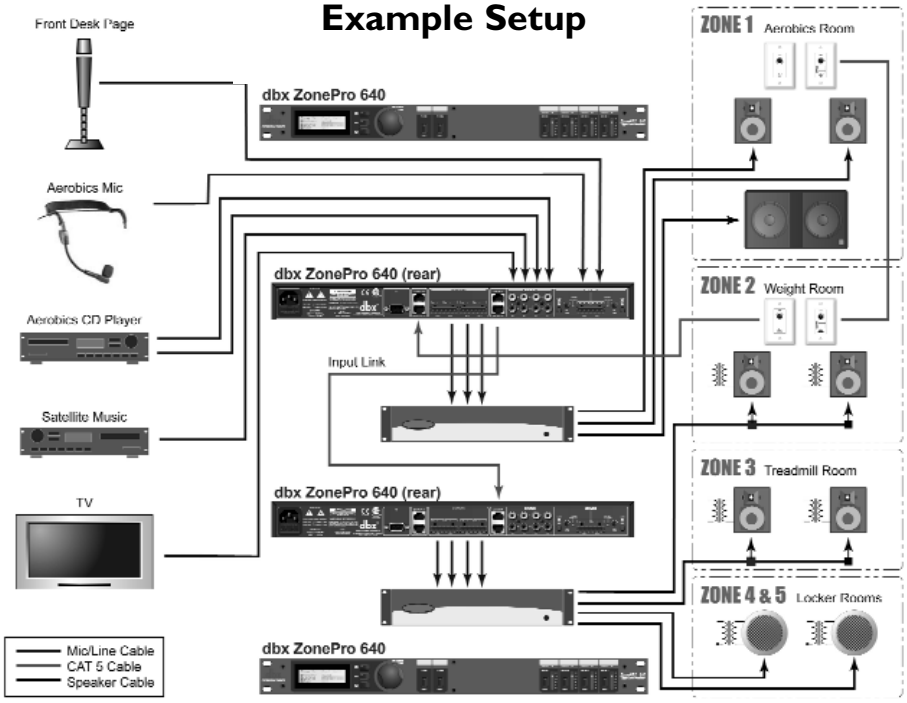
1. PC Connection

This DB-9 connection is used to communicate to the PC via RS-232 protocol.

2. Power LED

This LED (when lighted), indicates that the ZonePro 641 is currently powered.

1. 4 - Connections



When setting up the ZonePro units, make connections as follows:

- Always make connections prior to applying power to the unit.
- Connect the outputs from the sending devices (mixer, microphone, CD, DVD player or satellite, etc..) to either of four RCA, or two Euroblock input connectors.
- Make output connections from the Euroblock connectors to the input of the selected power amps or powered speakers.
- It is recommended that the power amps are turned off prior to cycling power to the ZonePro. Always make sure that your power amps are the last item turned on and the first turned off. Once all of the connections have been made and the unit is powered up, you can navigate through the entire signal path of the ZonePro from the included GUI.

1.5 - PC GUI Installation

Minimum System Requirements

1 GHz processor
Windows 2000 or XP
128 meg RAM
Recommended screen resolution:
1024 x 768 pixels or higher

Installation

- Install the ZonePro GUI software from either the dbx website at www.dbxpro.com or from the included CD ROM onto your computer.
- Once the software setup is downloaded, double click on the file named: ZonePro setup.
- The application will proceed to prompt you for the installation location.
- Once the software installation has been completed, it is recommended that you restart your computer.

Note:You must disable virus protection software during the installation of ZonePro Designer.

ZonePro™

Section 2

SOFTWARE
OPERATION

dbx®
PROFESSIONAL PRODUCTS

For your convenience, all the configuration and editing features of the ZonePro™ 640 and 641 are performed via the included Zone Pro GUI. This section has been created to act as a tutorial for performing various editing aspects of the unit.

2. 1 - ZonePro Philosophy

The philosophy of the ZonePro 640 and 641 is built around the concept the concept of a configuration, a scene and a device file.

Configuration

The configuration includes all of the processing blocks, the I/O configuration, and the zone controllers. The configuration is set up by going through the Configuration Wizard. The ZonePro device can only have one configuration, so all configuration changes must be completed before you start storing scenes. For more information on the configuration see Configuration Wizard in section 3.

Scenes

A scene consists of the parameters for all the modules and the assignment of zone controllers to a zone. The ZonePro products allow switching of scenes from the Real Time Clock, or from a ZC zone controller. Up to 50 scenes can be stored in the ZonePro unit. For more information on scenes see section 3.

Device

The configuration, scenes, and schedule information can all be stored off to a device file or .zpd (ZonePro device). Storing a device file to the computer and then recalling it into another ZonePro unit allows for exact duplication of a system in a single file download.

2. 2 - Views

There are three different views within the ZonePro Designer GUI; Venue view, Program screen, and Module view. **Venue view** From the Venue View you can add or delete devices and configure your network including selecting your COM port. Double clicking on a unit icon in the Venue view takes you to the Program screen. **Program screen** provides you with a graphic representation of the configuration of the individual ZonePro unit, including all the processing modules and their positions in the signal path. The program screen also offers access to meters, scene storing and loading, the Wizard functions, and file storing. Double clicking on the processing modules take you to the Module view. **Module view** (also called **edit screen**) provides access to the processing parameters. Editing of parameters is done in Module view.

2. 3 - Connections

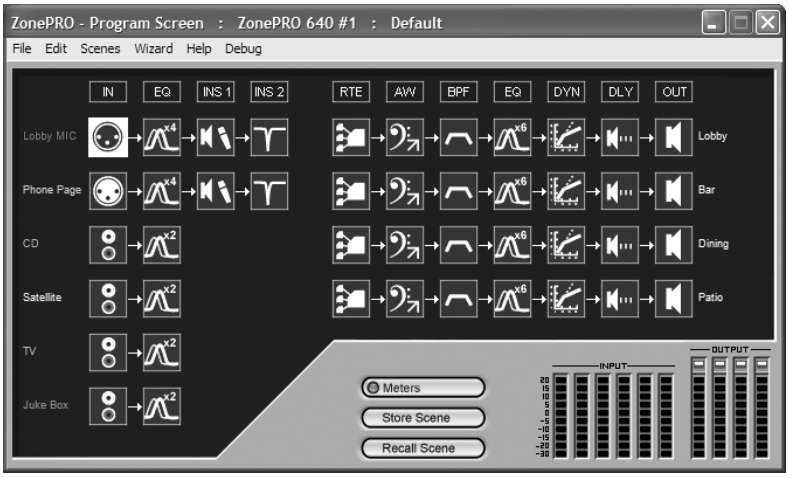
Once the software has been loaded and the ZonePro unit is connected via the included Null Modem cable, run the Graphic User Interface (GUI) by double clicking on the application icon. You will see the ZonePro Designer window open with an icon of the ZonePro™ unit. Double clicking on the unit will open the unit to the program screen where you will be able to see the processing modules and the configuration. If the computer cannot connect to the ZonePro device, check the COM port assignment under Network Properties in the Venue View, and make sure that you are connecting to the correct COM port.

2. 4 - Online/Offline

The ZonePro Designer GUI provides a mechanism for creating scenes and device files while not physically connected to a ZonePro unit. To work off-line, open the GUI, select **DEVICE** then select **ADD**. At this point you will be prompted to choose a 640 or 641. Once the unit has been inserted into GUI you can proceed to configure, edit, create scenes, and save ZonePro device files.

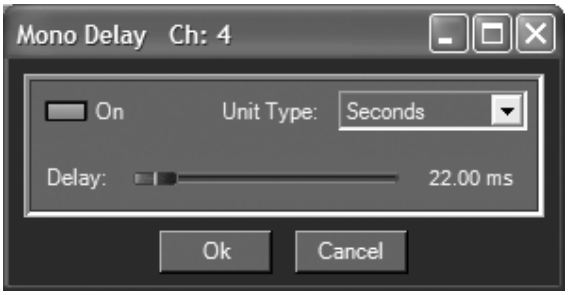
2. 5 - Configuration

Configuration of the ZonePro is done from the Configuration Wizard and allows setup of the inputs and outputs along with selection of their processing modules, zone controller setup, signal routing, and front panel setup. For a detailed operation description see "The Wizard" section 3.1.



2. 6 - Editing

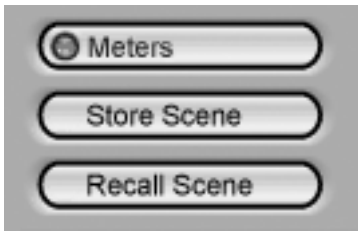
To edit a processing module, double click on that module. Adjust the module to taste; make sure that the module is engaged. This is usually indicated by the module **ON** button in the upper left corner of the parameter section. Although process editing is done in real-time, the changes can either be discarded or accepted by selecting the **OK** or **CANCEL** button. The following screen shot shows the example of the Output Delay module. Parameters can be copied and pasted between like modules in the ZonePro GUI. From the program screen either right click on the module and select Copy, or select Edit and Copy from the Menu Bar to Copy parameters. To past either right click and select Paste, or click on Edit Paste from the Menu Bar.



2. 7 - Saving and Recalling Scenes

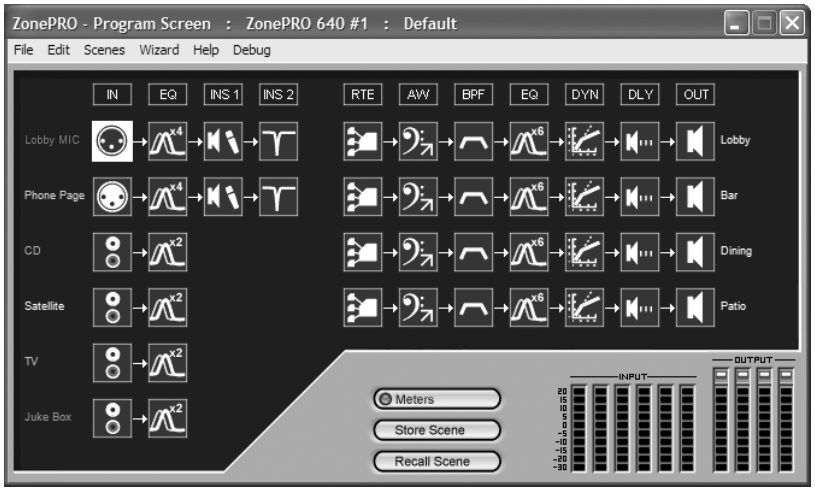
As previously stated, scenes include parameter data and zone controller assignment. Multiple scenes can be saved and recalled by either clicking on the Scene tab of the Menu bar or by using the Store Scene and Recall Scene buttons.

In use, multiple scenes can be recalled from either a zone controller or the Real Time Clock. The time in the Real Time Clock is set when entering the GUI, or it can be set using the Edit tab on the Menu bar and selecting time.



2. 8 - Meters

The input and output level meters can be turned off by clicking on the **Meter** button. Turning the meters off will help speed the communication and processing of slower computer systems. The ZonePro Designer GUI defaults with the meters turned on.



2. 9 - Saving Files

The device file provides a way to store off the entire ZonePro unit to a computer, which includes the configuration, scenes, and schedule information. To save a ZonePro device file, select **File** then **Save** from the Menu bar.

ZonePro™

Section 3

Setup

SYSTEM SETUP

dbx®
PROFESSIONAL PRODUCTS

3.1 - Overview

The System Setup section of the ZonePro manual will provide the user with detailed instruction for Configuration of the ZonePro unit and any Zone Controllers that may be used with it. The following sub-sections will provide you with detailed information regarding the various setup functions. Typical setup procedure of a ZonePro unit is as follows:

Step 1, Configuration Wizard - Use the Configuration Wizard to create the system configuration including I/O setup and naming along with DSP selection. The Configuration Wizard also provides Zone controller setup, routing setup and front panel setup for the 640.

Step 2, Parameter Editing - Double clicking on the various modules allows editing of parameters to adjust settings for individual installations or scenes.

Step 3, Scene Storing - Whether using a single scene or many, storing the scene is important to make sure that all parameter changes are saved. If just one scene is desired save this as the Default Scene.

Step 4, Scene Wizard - If multiple scenes are desired with routing or zone controller assignment changes, use the Scene Wizard to make those changes. Repeat Steps 2 and 3.

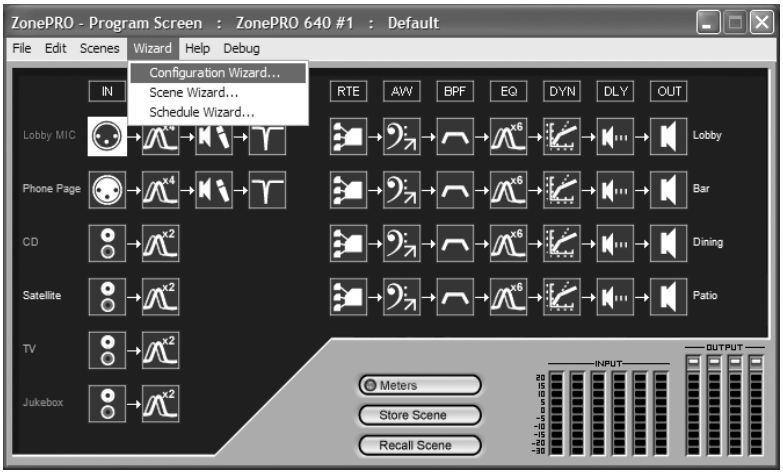
Step 5, Schedule Wizard - If multiple scenes are to be loaded using the Schedule function, setup the Schedule using the Schedule Wizard for each scene change. Make sure the clock is correct by clicking on Edit then Time from the Menu Bar.

Step 6, File Save - It is recommended that you save off a copy of your ZonePro device file using the File Save on the Menu bar. This file is a back-up and might come in handy for similar future installations.

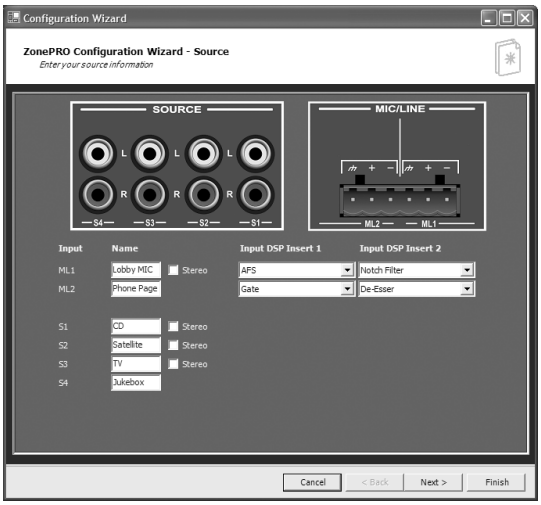
3.2 - Configuration Wizard

The Wizard function is used to configure the ZonePro processing modules, Zone Controllers and Front Panel. It provides a menu based decision tree to speed setup. This sub-section will walk you through each page of the Wizard function.

- From the Program Screen view of the setup, the display will appear something like this:

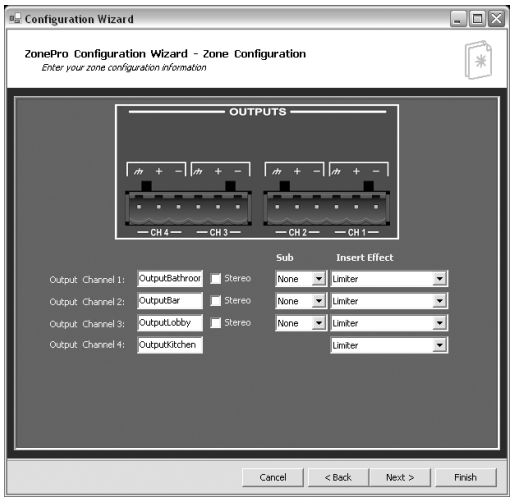


- Select the **Wizard** pull down from the menu bar and then select the option labeled **Configuration Wizard**. Once selected, a window will appear as follows:



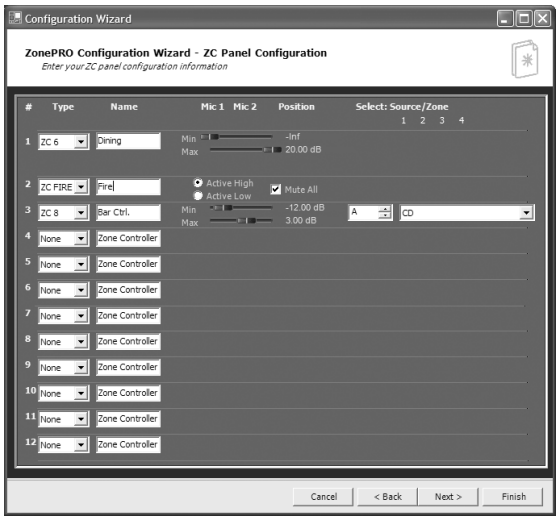
3.2.1 Input Setup

- This page is the Input Setup Page page and allows naming of inputs, input configuration (mono or stereo), and selection of the two mic/line DSP modules. Once you have named your inputs and selected insert modules, click on the **Next Page** button and the display will appear as follows:



3.2.2 Output Setup

- This page is the Output Setup Page and allows naming of the outputs, zone configuration, and selection of the Dynamics DSP module. The outputs can be configured as mono, or stereo either with or without a subwoofer. Once you have performed all of your output setup modifications, click on the **Next Page** button and the display will appear as follows:


Configuration Wizard
ZonePRO Configuration Wizard - ZC Panel Configuration
Enter your ZC panel configuration information
Type Name Mic 1 Mic 2 Position Select: Source/Zone
1 2 3 4
1 ZC 6 Dining Min -Inf Max 20.00 dB
2 ZC FIRE Fire! Active High Active Low Mute All
3 ZC 8 Bar Ctrl. Min -12.00 dB Max 3.00 dB A CD
4 None Zone Controller
5 None Zone Controller
6 None Zone Controller
7 None Zone Controller
8 None Zone Controller
9 None Zone Controller
10 None Zone Controller
11 None Zone Controller
12 None Zone Controller
Cancel < Back Next > Finish

3.2.3 ZC Panel Configuration

The ZC Panel Configuration Page allows setup of wall-mounted Zone Controllers to be used with the ZonePro unit.

ID #s - The ID numbers on the left side of the window correspond to the identification number set using the DIP switches on the individual zone controllers. ID 1-6 are connected to one of the ZC inputs on the rear panel and ID 7-12 are connected to the other input. For ID 7-12 add 6 to the ID # selected on the back of the ZC. For example, if I am connecting to input 7-12 and I am connecting a ZC with ID #3 selected this would be ID #9.

Names - The zone controllers can be named to eliminate confusion in later menus.
Since several zone controllers have multiple functions examples of each function will be shown:
Scenes - To change scenes a ZC-3 or ZC-4 must be used in the ID #1 position. This zone controller must have the scene check box checked. Select the desired scenes from the list of scenes on the right hand side of the window and associate it with the selector position A, B, C, D on a ZC-3 or switch position 1-16 on a ZC-4 (see ZC-4 switch positions within the Appendix).
Fire - The ZC-FIRE is a special case of scene selection. A ZC-FIRE can only be assigned to ID #2. Select whether the ZC-FIRE should be activated when taken high or low. Select to either Mute all outputs, or select the desired scene to be loaded.

Volume - A ZC-1, ZC-2, ZC-6, or ZC-8 can be used to adjust volume. Select the desired ZC type, and make sure it has the correct ID number. Set the maximum and minimum values for this zone controller. As a default, all volume zone controllers can provide up to +20dB gain boost and can cut to -Inf to mute.

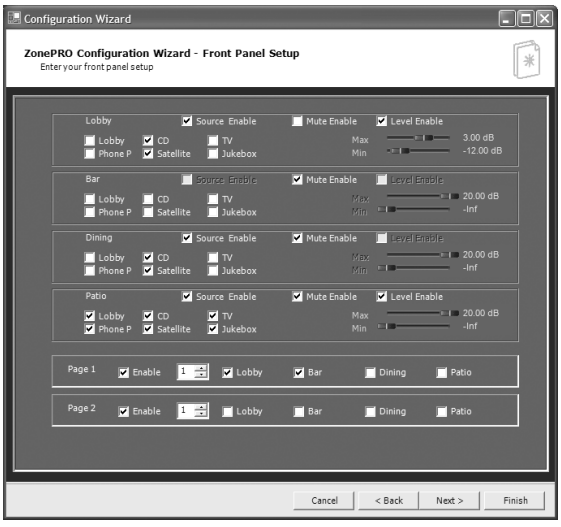
Source Selection - A ZC-3, ZC-4, or ZC-8 can be used to provide source selection. Select the desired ZC type and make sure it has the correct ID number. for a ZC-3 or ZC-8, for each switch position A-D select the corresponding source. For a ZC-4, select the switch position 1-16 and choose the corresponding input source (see ZC-4 switch positions within the Appendix).

Page Routing - To dynamically route or assign pages a ZC-3, ZC-4 or ZC-7 can be used. Select the desired ZC type, and make sure it has the correct ID number. For a ZC-3 only four zones or groups of zones can be switched between. Select which microphone is to be dynamically routed with this zone controller; for each position of the ZC-3 select the zones that are to to be paged by checking in the boxes for each zone output. A ZC-4 can switch between 16 zones or groups of zones. First choose which of the two microphones is to be routed with this zone

controller, then select the desired zones with each of the 16 switch positions. Like a ZC-3, the ZC-7 only has four positions so it will only support up to four zones or groups of zones, but it does have momentary switches that can be used in a push to call fashion, where each switch must be pushed and held to route the page to that zone or group of zones. First, select the microphone to be steered, then for each switch position choose the zones or groups of zones that are to be paged. Once you have performed all your zone controller configurations, click NEXT to move to the Routing Configuration.

3.2.4 Routing Setup

- The Routing Setup Page allows selection of the main Source, the Priority override source, the Page source, and the output level for each of the output zones. If Zone Controllers are used for either source selection or level control, these should be selected in the Source or Level pulldown menu. If zone controllers are being used for Page Steering select None in the Page menu for those outputs unless a microphone is always paging to that zone in addition to the page steering.



3.2.5 Front Panel Setup

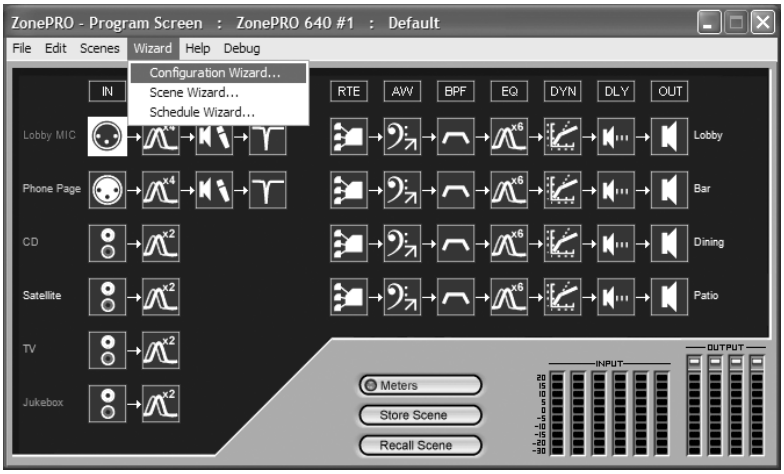
- The Front Panel Setup Page allows selection of which controls will be available to the end-user of the 640 unit. If Zone Controllers are being used for page steering, source, or volume control of an output zone these parameters will not be available from the front panel.

- Once all the Wizard pages have been completed the configuration is ready to be loaded, this is accomplished by selecting finish. You will now be returned to the normal editing mode of the ZonePro GUI.

3.3 - Scene Wizard

The Scene Wizard function is used to setup the various scenes that may be required within the installation. The Scene Wizard menu offers a single page window that provides a menu based decision tree to speed setup. This sub-section will walk you through the options of the Scene Wizard function.

- From the Program Screen view of the setup, the display will appear something like this:

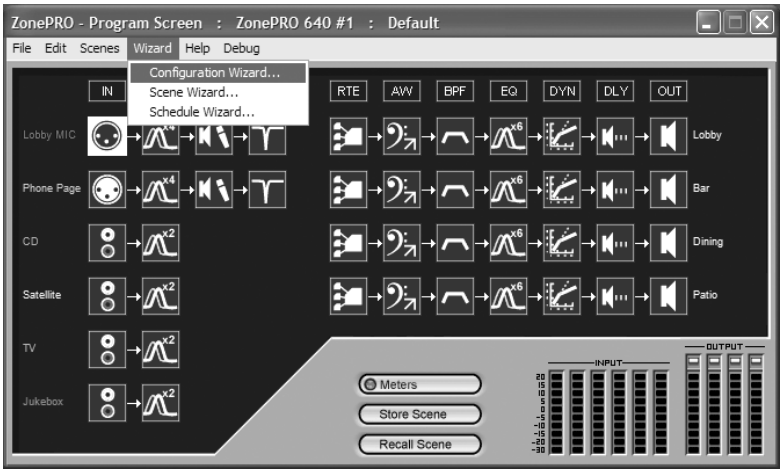


- Select the **Wizard** pull down from the menu bar and then select the option labeled **Scene Wizard**. Once selected, a window will appear as follows:

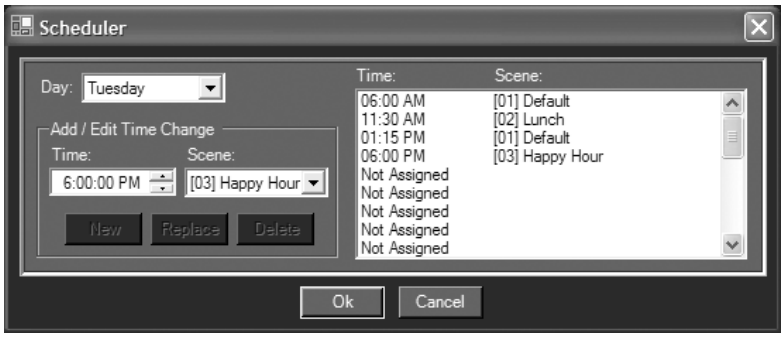
3.4 - Schedule Wizard

The Schedule Wizard provides for pre-determined scene changes corresponding to the time of day and/or day of week. For example installations such as restaurants often require volume increases during peak hours of operation. This sub-section will walk you through setting up the Schedule Wizard.

- From the Unit view of the setup, the display will appear something like this:



- Select the **Wizard** pull down from the menu bar and then select the option labeled **Scheduler Wizard**. Once selected, a window will appear as follows:



- At this point you can create a schedule for each day of the week, by recalling scenes at any time with up to 1 minute resolution. Up to 24 scenes can be recalled per day. Once all changes have been made, select Ok or Cancel and the window will be closed.

Section 4

Detailed Parameters

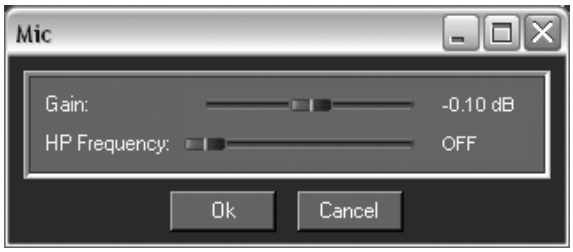
DETAILED PARAMETERS

dbx®
PROFESSIONAL PRODUCTS

The following section will provide you with a module block representation for each effect, as well as descriptions and explanations of all parameters within the ZonePro.

4.1 - Input

The signal routing begins at the INPUT block of the ZonePro™.



Gain Level -Inf to 20dB

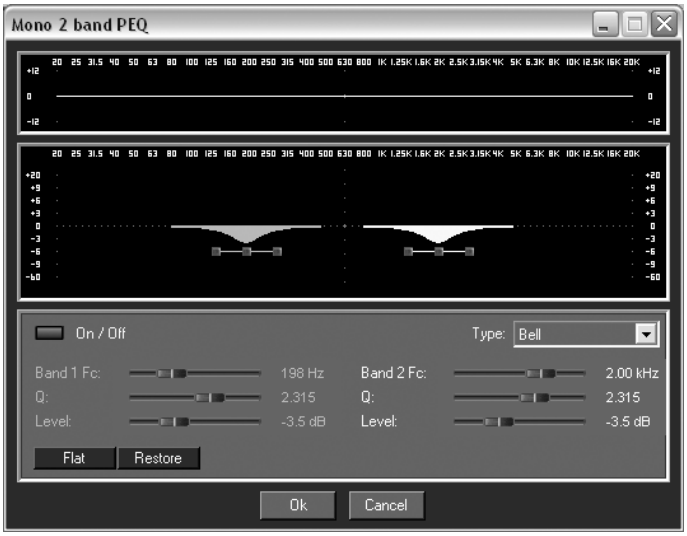
Adjusts the input level.

HP Frequency Off, 14.96Hz to 118.85Hz (Mic Inputs Only)

Adjusts the input High Pass cutoff frequency.

4.2 - Input Parametric EQ

The ZonePro units offer Pre-crossover parametric sections on each input, and may be configured as a single or linkable 2-band (RCA inputs only) or 4-Band PEQ (Mic inputs only).



EQ On/Off

Turns the PEQ on and off.

Type Low Shelf, HighShelf, Low/High Shelf and Bell

The Type selector allows you to select either a Low, High, Low/High shelf or Bell EQ curve.

Flat /Restore
These buttons either flatten (Flat) or restore (Restore) all bands to their original settings.

Band (1-4) Frequency 20Hz to 20kHz (Low Shelf)
Selects the frequency of the EQ.

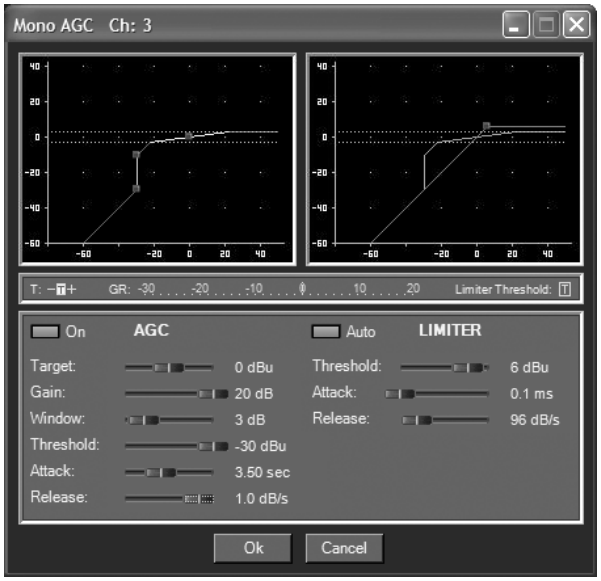
Q (1-4) 0.105 to 16.0
Selects the Q or the Bell parametric EQ.

Slope (Type: High and/or Low Shelf Selected) 3-12dB/Octave
Sets the slope of the High and/or low shelf parametric EQ.

Level (1-4) -12 to 12 dB
Sets the overall level of the selected parametric EQ.

4.3 - AGC (Insert and DYN Module)

The AGC is used to keep the average level of a signal constant. This is done by selecting a desired Target output level and Window. The AGC keeps the signal within the Window about the selected Target by slowly adjusting the gain. The maximum gain that can be applied to the signal is selected by the Gain parameter. When the input signal falls below the Threshold the AGC releases the gain and returns to unity. This prevents the AGC from adding gain when there is no signal present and raising the system noise floor. High level peak signals are reduced by a fast limiter to prevent distortion by clipping. The AGC Threshold meters show what region of the AGC the input signal is in. The T (yellow) indicates the signal is within the Window. A + (red) indicates the signal is above the target window. A – (green) indicates the AGC is adding adding Gain and is at or below the window. When the Threshold meter is off the signal is below the Threshold. The AGC module also includes a dedicated Limiter.



AGC On/Off
Turns the AGC module On and Off.

Target -20 to 20 dB

The Target parameter defines where you would like the average level of the AGC output to be. If the average level of the signal rises above the Target the gain will be reduced. For signals with an average level below the Target the gain will be increased.

Gain 1 to 20dB

This adjusts the maximum amount of gain that can be added by the AGC.

Window 1 to 10dB

This adjusts the amount of variation in the output

Low Threshold -60 to -30dB

The Low Threshold sets a lower limit to the AGC. This prevents the AGC from adding gain to low level signals or noise.

Attack 0.20 to 5 Seconds

This adjusts how fast the AGC will increase gain.

Release 30.0 to 1 dB/Second

This adjusts how fast the AGC will reduce gain.

AGC Limiter Threshold -40 to +20dBu

The AGC is designed to add or remove gain slowly to maintain an average signal level. Because of its slow nature a fast Limiter has been added to protect speakers from sudden transients. The Limiter threshold can be set from the top of the AGC Window up to +20dBu.

AGC Limiter Attack .01 to 200 m Sec

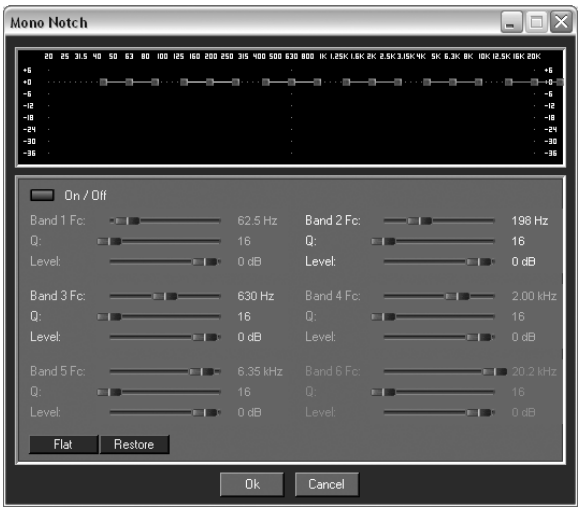
This is the speed at which the limiter starts to compress the signal once it has crossed the threshold.

AGC Limiter Release 360 to 5 dB / Sec

Just like the release time on the compressor, the limiter's release time controls how fast the limiter releases from gain reduction after the signal drops below the threshold.

4.4 - Notch Filters (Insert Module)

The notch filter is the perfect tool for dropping out undesirable frequencies that may appear in the input signal.



Notch On/Off
Turns the notch filters on and off.

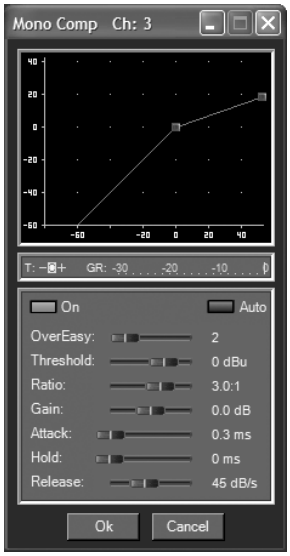
Frequency (1 to 6) 20 to 20K
Selects the desired notch filter frequency of the selected notch filter.

Q 16 to 128
Selects the Q of the selected notch filter.

Level -36 to 6 dB
Sets the level of the selected notch filter. Set to +6dB to help find unwanted feedback, then set to -3dB to -36dB to remove.

4.5 - Compressor (Insert and DYN Module)

The ZonePro™ also offers a dedicated compression module. The Compressor is the perfect tool for tightening uneven signal sources such as vocals and guitars. The parameters for the Compressor are as follows.



Compressor On/Off

Turns the Compressor module on and off.

OverEasy Off to 10

OverEasy is a soft-knee smoothing function that occurs about the compression threshold. OverEasy off is considered hard knee; the higher the OverEasy the greater the smoothing.

Threshold -40 to +20dBu

Threshold is the signal level at which the unit starts to compress the signal. If the level is set to -10 dBu, than any signal larger than -10 dBu is compressed while any signal that has a level that is lower than -10dBu is left at the same signal level. For most signals the most natural compression is achieved when most of the signal content remains just below the threshold and only the peaks cross the threshold.

Ratio 1.0 to Inf:1

Ratio is the amount the unit reduces the signal level of the sound that is above the threshold. A 2:1 ratio means that if the incoming signal is 2dB over the threshold the unit will compress the signal, and outputs a signal that only goes 1dB over the threshold. For light compression choose a lower ratio, while a heavy compression requires a higher ratio. A setting of Inf:1 makes the compressor act as a limiter.

Gain -20 to +20 dB

This parameter is used to compensate for the gain lost during compression. By using heavy compression on a signal and then boosting the signal with the output gain, the user can create a signal that sounds much louder than it actually is.

Auto On/Off

When Auto Mode is on, the ZonePro™ automatically sets the Attack, Hold, and Release times for the signal. The auto mode constantly adjusts these parameters in real time for optimum performance from the unit. You will find that for most applications, not only is using the auto mode faster and easier but by letting the unit constantly tweak these parameters for you will result in a better end result.

Attack 0.1 m Sec to 200 m Sec

Attack is how fast the compressor starts to compress the signal after it passes the threshold. Fast attack is useful when dealing with lots of fast transients. The attack control is not active when in auto mode.

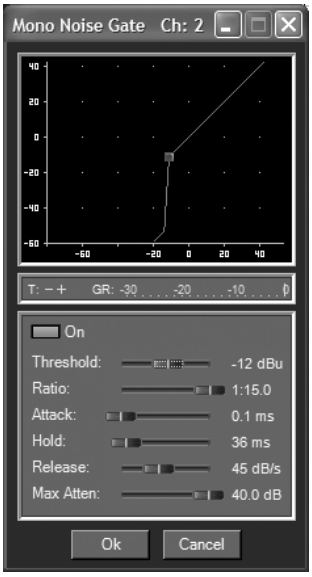
Hold 0 to 500 m Sec

Hold is the time the ZonePro remains in compression after the signal has dropped below the threshold. A longer hold time is useful in smoothing out the sound when compressing several fast peaks that are fairly close together in time. The hold control is not active while in auto mode.

Release 360 dB / Sec to 5 dB / Sec

Release is how fast the ZonePro comes out of compression. The release is in dB per second. For example, if release is set to 5 dB /sec, and the signal is at 10dB of gain reduction, the release time is 2 seconds. Having a release time that is either too fast or too slow for the signal can result in audible artifacts called pumping or breathing. This can cause volume drops in your signal that may not be desired. The release control is not active while in auto mode.

4.6 - Noise Gate (Insert Module)



Gate On/Off

Turns the Gate on and off.

Threshold -50 to 20 dBu

The threshold is the level at which the gate opens. Anything above the threshold passes, while signal that is lower than the threshold is attenuated. Beware, setting the threshold to high can cut off the tail end of signals as they fade out (the sustain of a guitar note, a held piano chord, a reverb tail, etc.).

Ratio 1:1.0 to 1:15

This is where you decide how much downward expansion you want. This ratio works opposite from that of the compressor or limiter. If a ratio of 1:4 is selected, a signal that is 1dB below the threshold will be reduced in gain so that it becomes 4dB below the threshold.

Attack 0.1 to 200 m Sec

As the signal reaches the threshold area, the Attack control sets the speed at which the gate opens. Use very fast attack times to catch the fronts of transient signals.

Hold 0 to 500 m Sec

The Hold control sets the amount of time the gate is held open after the signal passes below the threshold point.

Release 360 to 5 dB

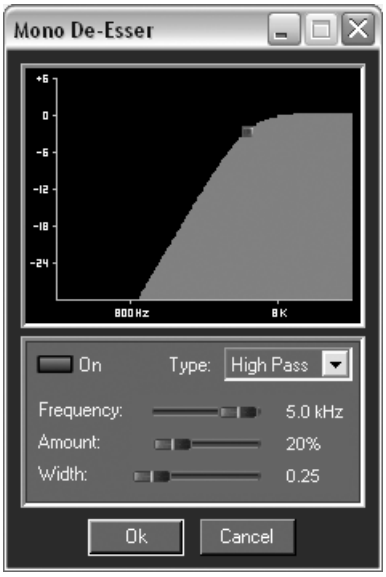
Release sets the speed at which the gate "closes" or attenuates when the end of the Hold time is reached.

Max Attenuation 0 to Inf. dB

This sets the maximum amount of attenuation for the gate.

4.7 - De-Esser (Insert Module)

The ZonePro™ offers a de-Esser module. This De-esser effect is ideal for removing unwanted vocal sibilance. These parameters are user adjustable on all programs and are as follows:



De-Esser On/Off

Turns the De-Esser on or off.

Freq 800 Hz to 8.00 kHz

This is the center frequency the De-Esser uses when in Band Pass mode or the corner frequency used when in High Pass mode.

Amount 0 to 100%

This controls the amount of De-Essing. The amount control is very much like a combination threshold / ratio control. A higher amount applies more De-Essing to the signal.

Type HP or BP

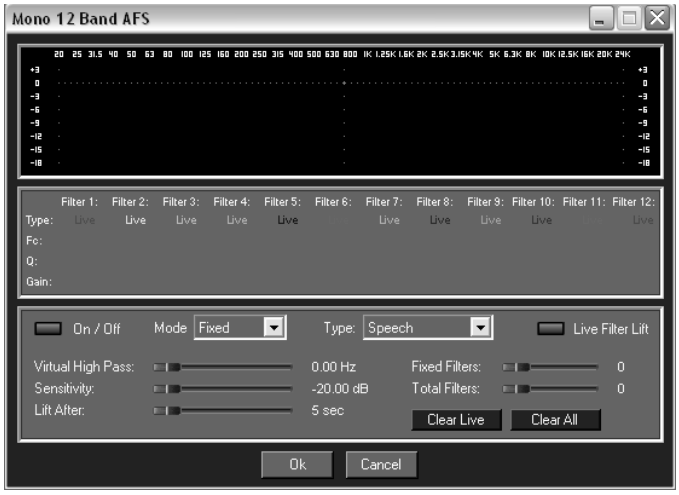
Selects the type of filter used by the De-Esser.

Width

Sets the Q of the Band Pass Filter.

4.8 - AFS (Insert Module)

The ZonePro™ offers the exclusive patent pending AFS (Advanced Feedback Suppression) feedback elimination module. Feedback is caused when a microphonic signal such as a guitar pickup or microphone is reproduced by an amplification and is repeatedly picked up in phase. The AFS module of the ZonePro™ allows the user to optimize the elimination of feedback. With the AFS algorithm active the ZonePro removes only the feedback frequencies without affecting the remaining audio spectrum.



AFS On/Off

Turns the AFS module on and off. If AFS is Off, the filters are bypassed, and the algorithm is halted (the filters are not updated). If AFS is On, the filters are active, and the they are updated according to the current selected mode (Fixed or Live).

Clear Live and ClearAll

These buttons (when selected) clear the filters. If Clear Live is selected, only the live filters are reset. If Clear All is selected, then all of the filters are reset.

Mode - Live or Fixed

When the mode is Fixed, the algorithm updates only the fixed filters. When the mode is Live, the algorithm updates only the live filters. In FIXED mode, the filters are stored with the program at that frequency until cleared by the user. Fixed mode is used during setup to set filters at frequencies that are most likely to feedback. In LIVE mode, the live filters automatically detect and remove feedback during the performance. When all of the live filters have been used, they begin to round robin. Essentially this means that the first filter set is moved where a new feedback is detected and notched out. This mode is useful because feedback frequencies may change as the microphone is moved, and/or as the characteristics of the venue change. Note- Only the fixed filter settings will be stored with the program.

Type - Speech, Low Music, Medium Music and High Music

Type allows the AFS algorithm to be customized for the application. The Values correspond to different Q and sensitivity settings. These types pertain to the Q, sensitivity, and algorithm type. Values are; Speech (Bandwidth = 1/5 octave and Q=7.25) Music Low (Bandwidth = 1/10 octave and Q=14.5) Music Medium (Bandwidth = 1/20 octave and Q=29) Music High (Bandwidth = 1/80 octave and Q=116). Note: To guarantee that feedback is suppressed at lower frequencies, the AFS may place wider notch filters at these lower frequencies (below 700 Hz).

Total Number of Filters 1-12

This parameter selects the number of filters being used

Number Fixed - 0-12

This parameter sets the number of Fixed AFS filters. This also sets the number of Live filters as the Total number of filters - number of Fixed Filters = number of Live Filters.

Live Filter Lift (On/Off)

This parameter turns the Live Filter Lift on and off.

Lift After - 5 sec to 60 min

This parameter allows the user to setup the box so that the Live filters will automatically be removed after a set time (as indicated by the "Lift After" parameter). It ranges from 5 seconds to 60 minutes. This feature is useful if the microphone being used is moved or the characteristics of the venue change over time. This feature removes unnecessary filters from the spectrum to increase sonic quality.

Detector Highpass Off, 11.7 - 410.1Hz

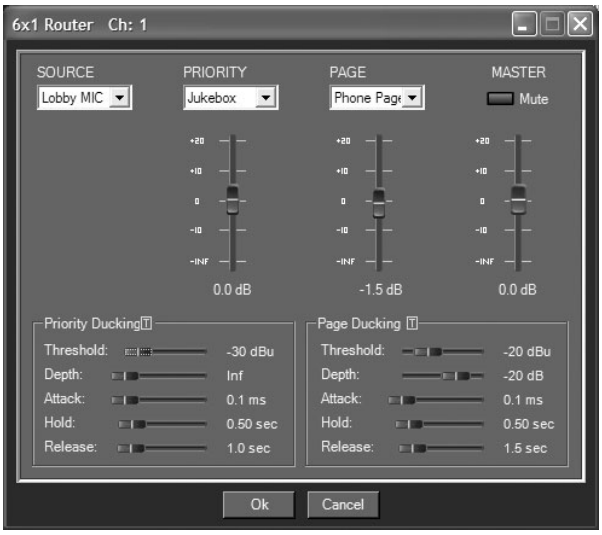
This parameter sets a highpass filter in the path of the AFS detector. There may be occasions where the AFS algorithm is removing too much low end because it is being triggered by Synthesizer or Bass notes that are not really feedback. This parameter provides a mechanism to make the AFS algorithm less sensitive to low frequency thereby setting fewer filters in the bass region.

Sensitivity -20-+20dB

The AFS algorithm is very effective when the audio has a nominal level of 0 dBu, however if the audio is too low in level the AFS algorithm may not catch feedback as quickly as possible. By increasing or decreasing the sensitivity you can adjust for audio that is either too loud or too soft and help the AFS function properly.

4.9 - Router

The Router module is the heart of the ZonePro device and allows for a primary source, a priority override sources and a paging source, where the paging source has the highest priority. Both priority override and page have duckers that allow them to duck the previous sources.



Source Select
This parameter allows the user to select the input source for the zone.

Priority Select
This parameter allows the user to select which input will override the primary source signal..

Priority Level -Inf to 20dB
Adjusts the output level of the selected Priority input signal.

Page Select
This parameter allows the user to select which Paging input will override the source signal.

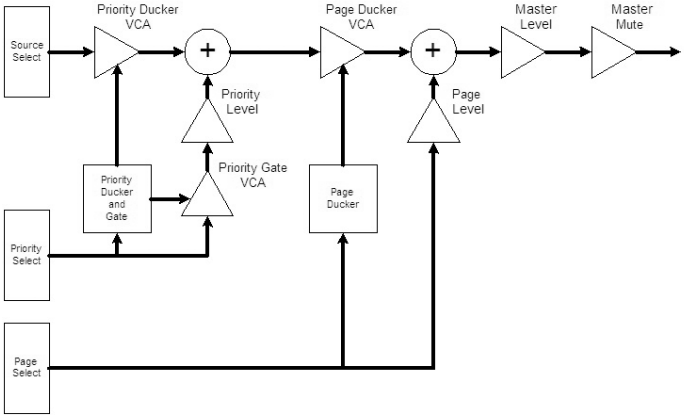
Page Level -Inf to 20dB
Adjusts the output level of the selected Paging input signal.

Master Level -Inf to 20dB
This parameter adjusts the output level of of the Zone.

Master mute
When selected, the the signal will be muted for the Zone.

The Router contains two Ducker modules for Priority and Page sources. The Priority Ducker attenuates the primary source and adds the Priority source. The Priority source is also gated using the same timing as the Priority Ducker. When the Priority source crosses the Priority Ducker Threshold the Ducker attenuates the Primary source by the Depth amount. At the same time the Priority Gate opens to allow the Priority source to be summed over the primary source. The Gate depth is –INF when closed to prevent adding noise to the primary source.

The Page Ducker attenuates both the primary source and the Priority source if present. A Page source Gate can be added using the Mic/Line Insert 1 or 2.



Threshold -40 to +20dBu

Threshold is the level from the priority or page source at which the Ducker will attenuate the Router source.

Depth Inf to 0dB

This parameter sets the amount of Ducker attenuation.

Attack 0.1 m Sec to 200 m Sec

Attack is how quickly the signal is attenuated by the Ducker

Hold 0.1 to 20.2 m Sec

Hold time is the length of time before the Ducker releases.

Release 0.0 to 10.0 dB/Sec

Release is how quickly the attenuated signal returns to its nominal level.

4.10 - Auto Warmth®

The ZonePro™ 640 and 640 offer the AutoWarmth® module on each output. AutoWarmth® is a patent pending process that compensates for naturally occurring bass frequency loss for low level signals. The Fletcher-Munson Equal Loudness curves show that the perception of low frequency signals decreases quickly with decreasing loudness. AutoWarmth® gradually boosts the low end in response to the overall loudness of the signal. The result is warm and balanced signal at low levels.

Auto Warmth On/Off

This parameter is used to turn the Autowarmth module on and off.

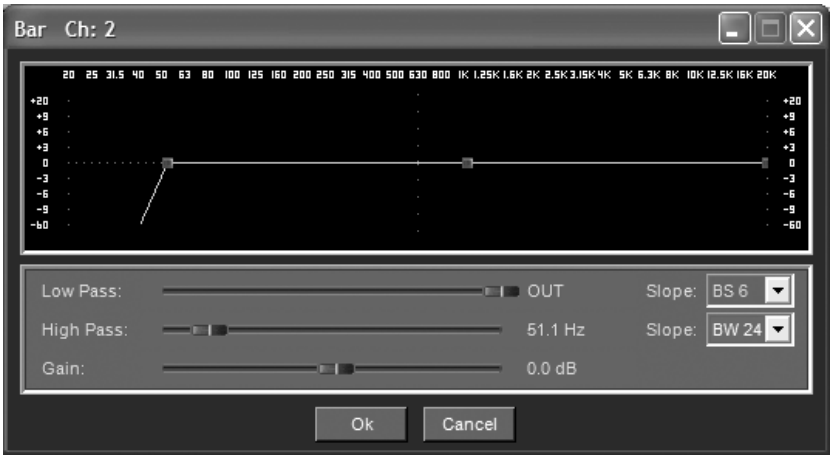
Threshold -40 to +20dBu

The threshold sets the level where AutoWarmth® begins to work. Signals below the threshold are processed to increase the Bass response in proportion to the overall volume of the signal. Above the threshold there is no processing. The Threshold meter will light Green when the threshold has been crossed and AutoWarmth is active. To set the threshold, turn AutoWarmth® off and adjust the Master gain in the router to the desired listening level. Turn AutoWarmth® on and adjust the threshold until the threshold meter just turns off. Now as the volume decreases below the desired level the bass will gradually increase. Be careful when using AutoWarmth® followed by an AGC. The AGC can add gain when below the AutoWarmth® threshold resulting in overcompensated Bass.

Amount 0.25:1 to 4.00:1

The amount controls how much Bass is added. A setting of 1.00:1 compensates the signal as described by the Fletcher-Munson Equal Loudness curves. Higher settings (greater that 1.00) causes more bass. Lower setting result is less bass compensation.

4.11 - Bandpass Filter/Crossover (BPF)



Highpass Out to 20kHz

Adjusts the lowest frequency that the output will achieve.

Lowpass Out to 20Hz

Adjusts the highest frequency that the output will achieve.

Gain -Inf to 20dB

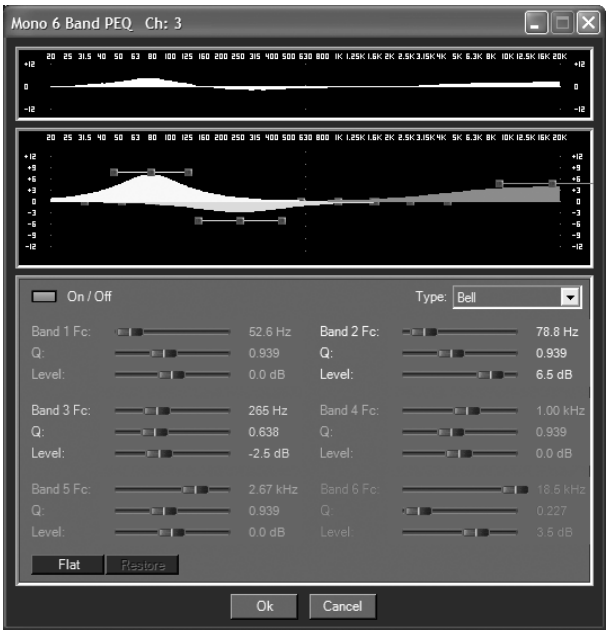
Sets the gain of the Crossover output.

Low Pass and High Pass Slope - Butterworth (BW 6,12,18 and 24), Bessel (BS 6,12,18 and 24) and Linkwitz-Riley (LR 12 and 24)

Selects the desired crossover slope type.

4.12 - Output Parametric EQ

The ZonePro units offer parametric EQ on all inputs. A 4-Band PEQ is available on the Mic/Line inputs while a 2-Band PEQ is available on the RCA line inputs.



EQ On/Off

Turns the PEQ on and off.

Type Low Shelf, HighShelf, Low/High Shelf and Bell

The Type selector allows you to select either a Low, High, Low/High shelf or Bell EQ curve.

Flat /Restore

These buttons either flatten (Flat) or restore (Restore) all bands to their original settings.

Band (1-6) Frequency 20Hz to 20kHz (Low Shelf)

Selects the frequency of the low pass shelf parametric EQ.

Q (1-6) 0.105 to 16.0

Q is adjustable from 0.105 to 16.000

Slope (Type: High and/or Low Shelf Selected) 3-12dB/Octave

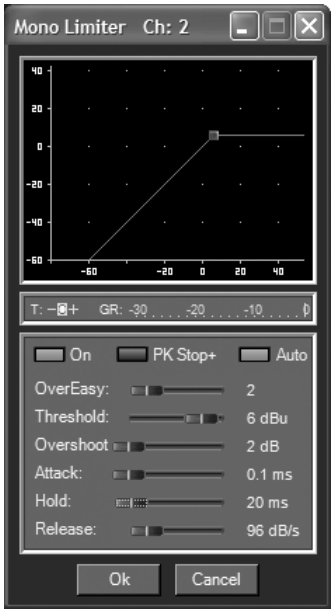
Sets the slope of the High and/or low shelf parametric EQ.

Level (1-6) -12 to 12 dB

Sets the overall level of the selected parametric EQ frequency.

4.13 - Output Dynamics

The ZonePro™ units offer a dedicated output dynamics module which includes Compression, Limiting and Auto Gain Control. The Output Dynamics are located on each output channel and have been strategically placed for speaker and amplifier protection. Note: Compression parameters are explained in sub section 4.5, and AGC parameters are explained in sub section 4.3.



Limiter On/Off

Turns the Limiter module on and off.

OverEasy (O) Off to 10

OverEasy is a soft-knee smoothing function that occurs about the limiting threshold. OverEasy off is considered hard knee; the higher the OverEasy, the greater the smoothing.

Threshold -40 to +20dBu

Threshold is the signal level at which the unit starts to limit the signal. If the level is set to -10 dBu, any signal larger than -10 dBu is limited while any signal that has a level that is lower than -10dBu is left at the same signal level. Light limiting is where only the loudest parts of the signal go over the threshold. Very heavy limiting can be achieved by setting the threshold low enough that almost the entire signal content is over the threshold. For most signals, the most natural compression is achieved when most of the signal content remains just below the threshold and only the peaks cross the threshold.

Auto On/Off

When auto is turned on the ZonePro™ will continuously set the attack / hold / release controls itself.

Attack .01 to 200 m Sec (per band or global)

This is the speed at which the limiter starts to limit the signal once it has crossed the threshold.

Hold 0 to 500 m Sec (per band or global)

Hold is the time the limiter stays in gain reduction after the signal level has dropped below threshold. Hold is useful when you want the limiter to function for a period of time after it has been triggered. **Be careful not to set the hold time too long as it will not release in time.**

Release 360 to 5 dB / Sec (per band or global)

Just like the release time on the compressor, the limiter's release time controls how fast the limiter releases from gain reduction after the signal drops below the threshold. Set the release times longer for lower frequency bands and shorter for higher frequency bands.

PeakstopPlus® On/Off

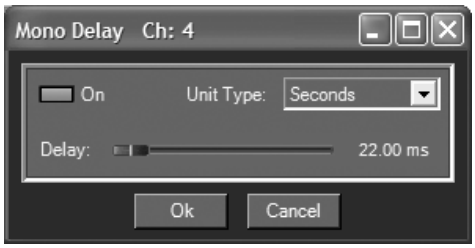
The first stage of PeakStopPlus is the Instantaneous Transient Clamp™ which clamps the signal with a soft logarithmic clamp function. This logarithmic function ensures that the signal will not exceed the level set by the PeakStopPlus OVERSHOOT control by more than the overshoot amount, and that it will not introduce harsh artifacts. The second stage is a unique program limiter featuring Intelligent Predictive Limiting™. Its function is to monitor the input signal and intelligently predict the amount of gain reduction needed to keep the output signal below the ceiling set by the Instantaneous Transient Clamp™.

Overshoot 1-6

This parameter sets the amount of overshoot for the Instantaneous Transient Clamp™.

4.14 Delay

The parameters for the delay are as follows and are user adjustable:



Delay On/Off

Turns the delay module on and off.

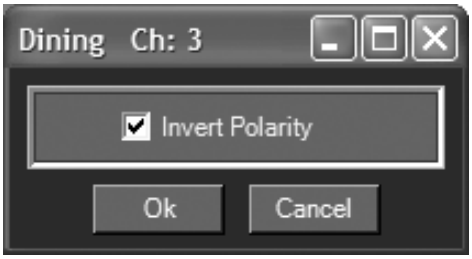
Length

Sets the amount of delay time. Maximum delay time is 650ms.

Units Seconds, Feet or Meters

Selects the unit of measurement for the delay.

4.15 - Output



Polarity Normal or Invert

This section is used to select either the Positive or Negative polarity.

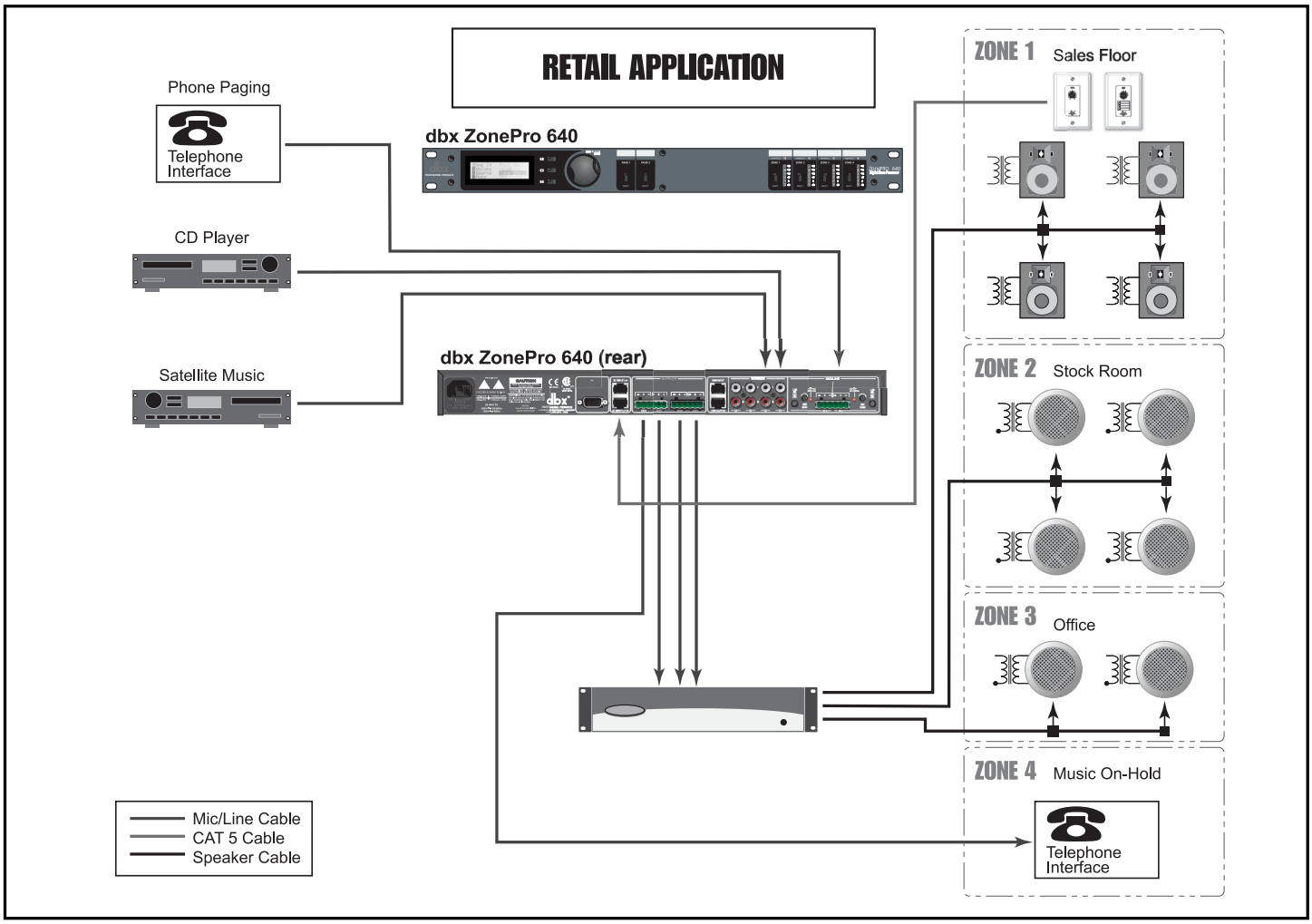
ZonePro™

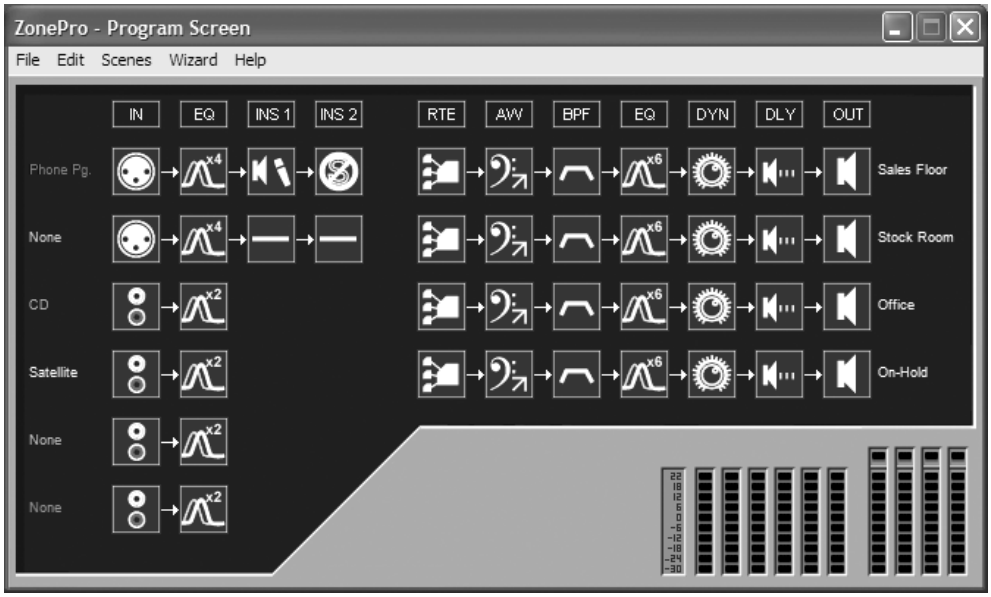
Section 5

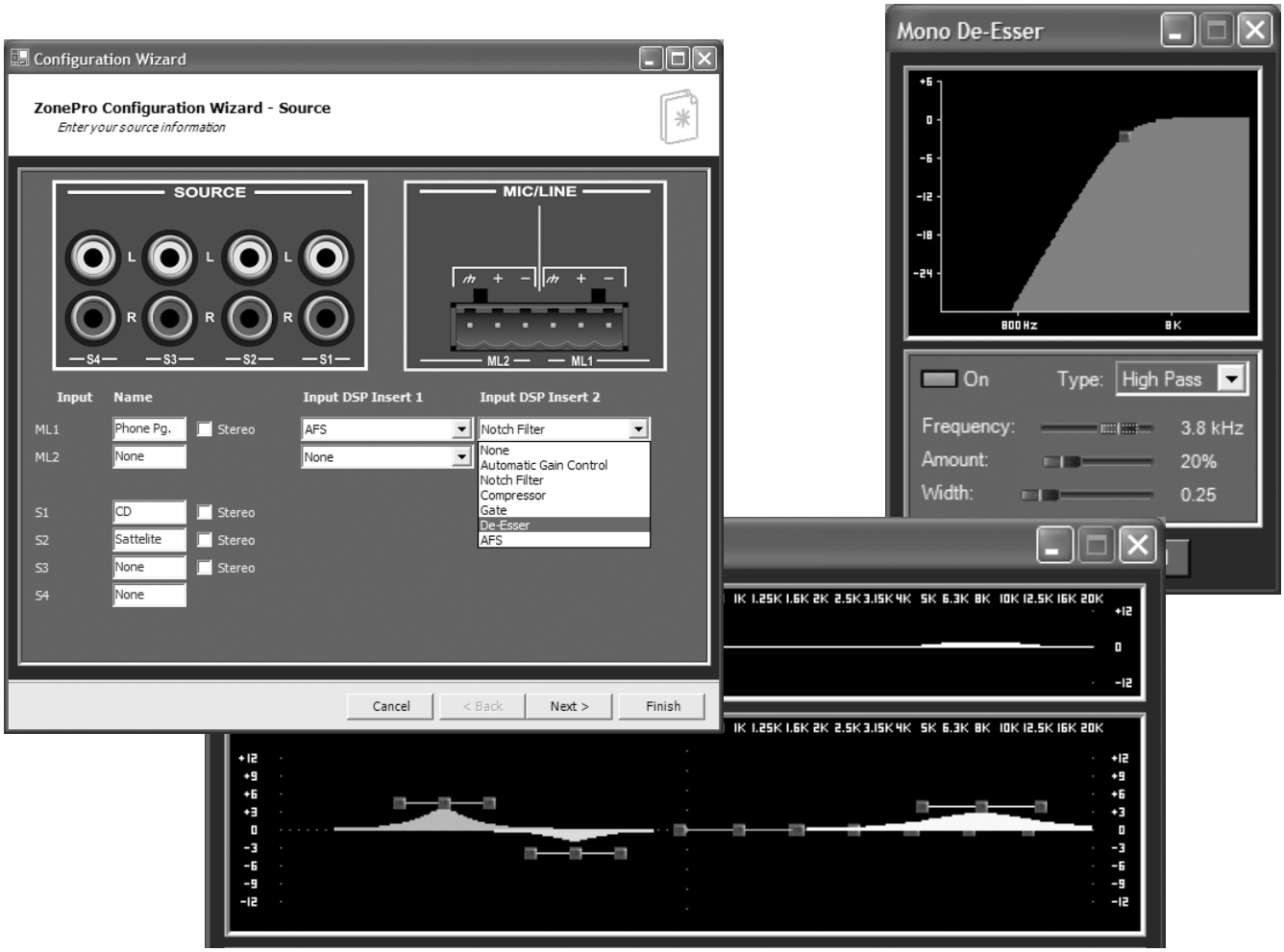
APPLICATION GUIDE

dbx®
PROFESSIONAL PRODUCTS

5.1 - Retail Install



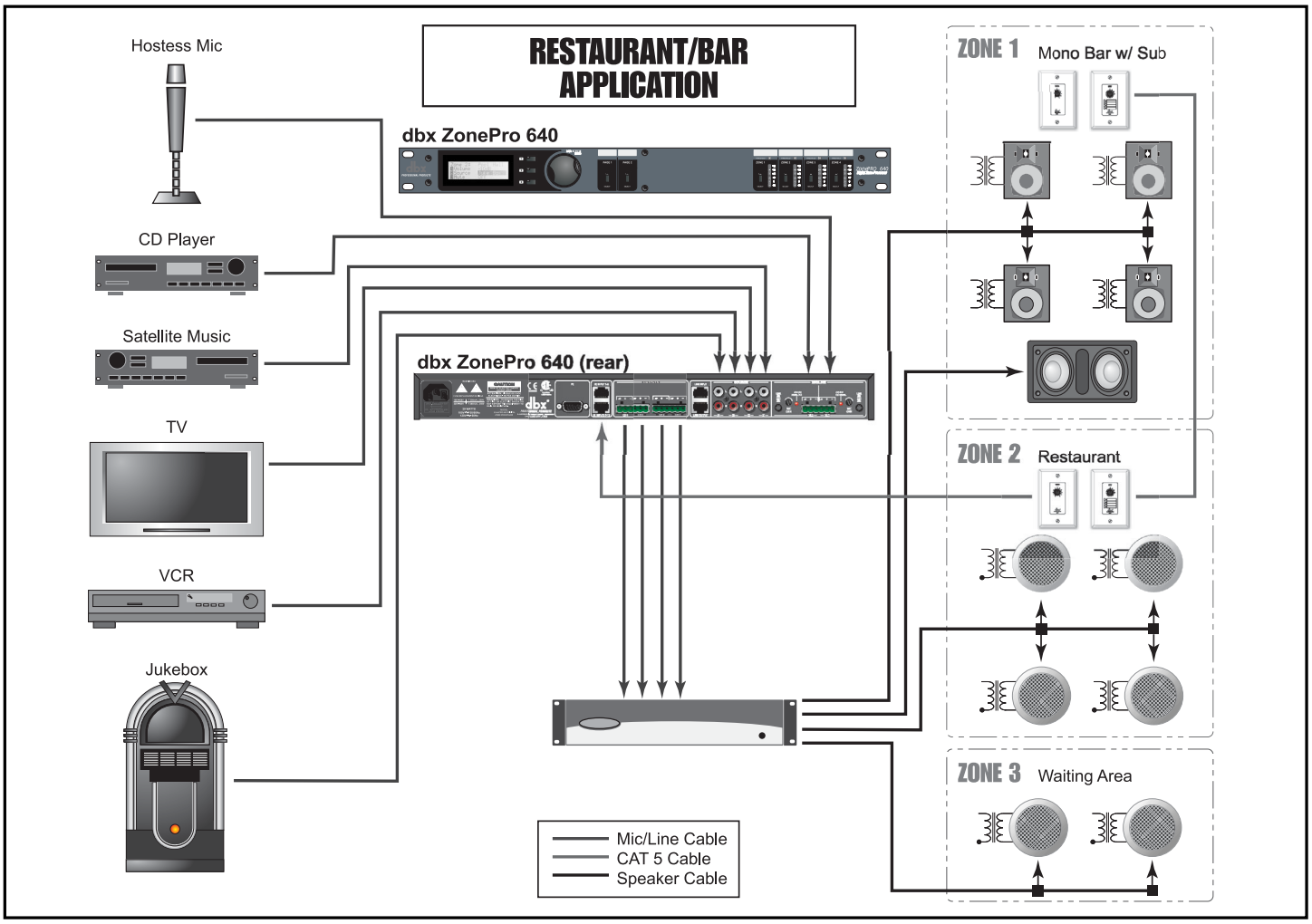


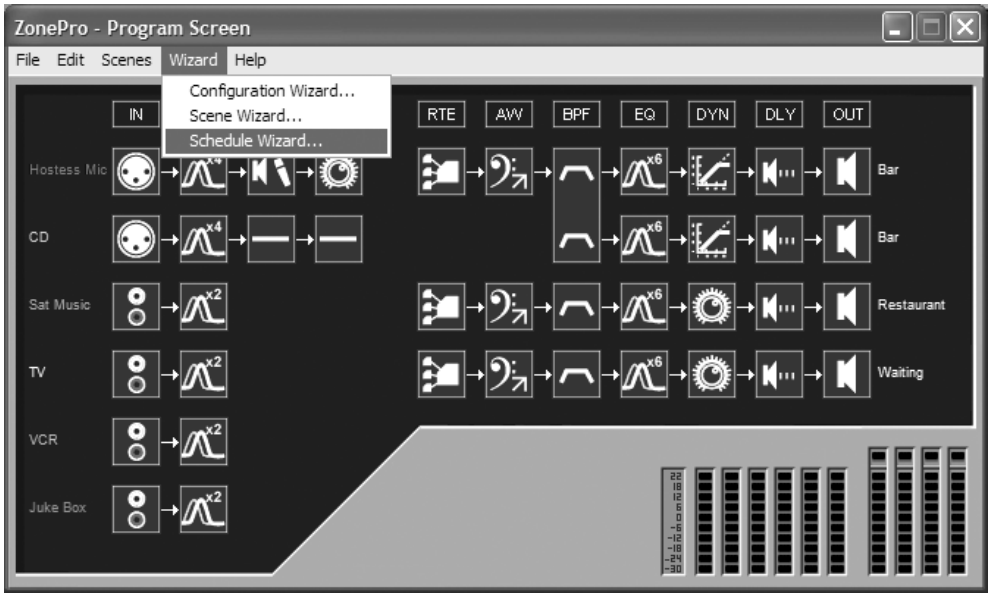


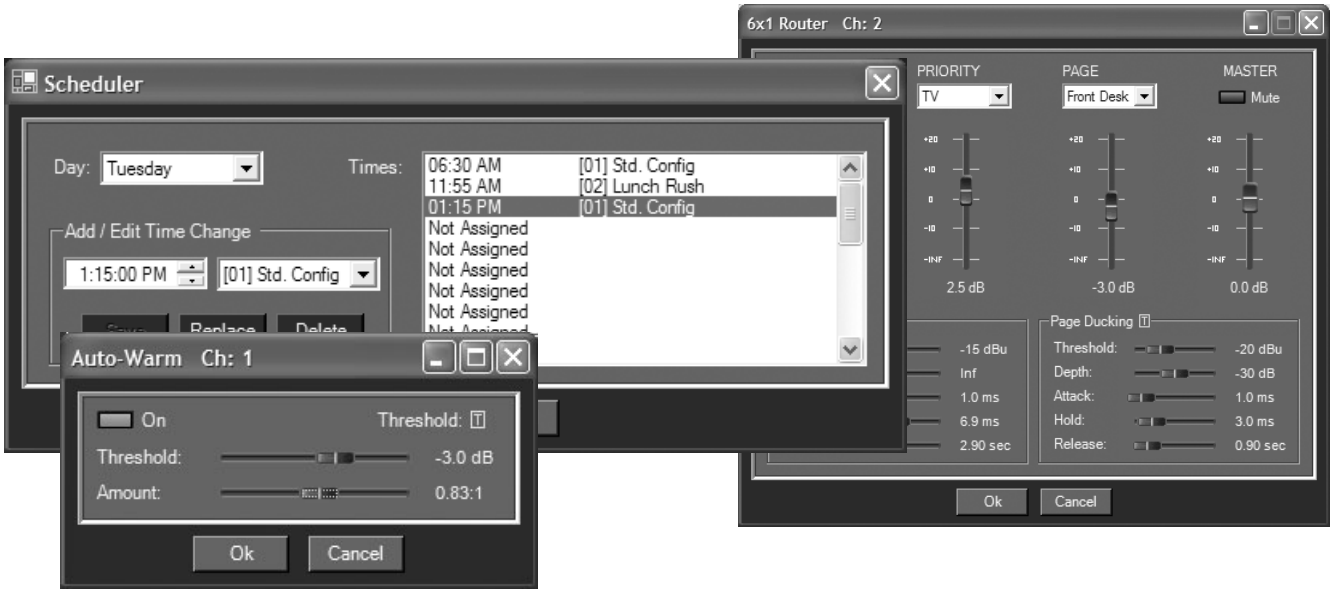
Retail Application Notes

1. The configuration is setup from the Wizard function and is used to select the main inputs to each zone except the sales floor where the ZCs are selected as the source and level.
2. All paging is done from the phone page interface and can be steered to the sales floor, the stock room, and the office, but not the music on-hold. Page steering is done from the front panel of the ZonePro 640.
3. The Zone Controllers are wired with CAT5 cable in series with the ZC-3 (Source Selection) as ID #1, and ZC-1 (Volume) as ID #2, and are placed next to the cash register.
4. EQ, Feedback Suppression and De-Essing are used on the phone page input to help improve intelligibility and reduce unwanted feedback in the system.
5. The Bandpass Filters are used to reduce the out of band information being sent to the speakers so their efficiency can be maximized.
6. EQ is used in all zones to make the system sound as good as possible.
7. Auto Gain Control is being used on all output zones to maintain the signal level.

5.2 - Restaurant/Bar Install



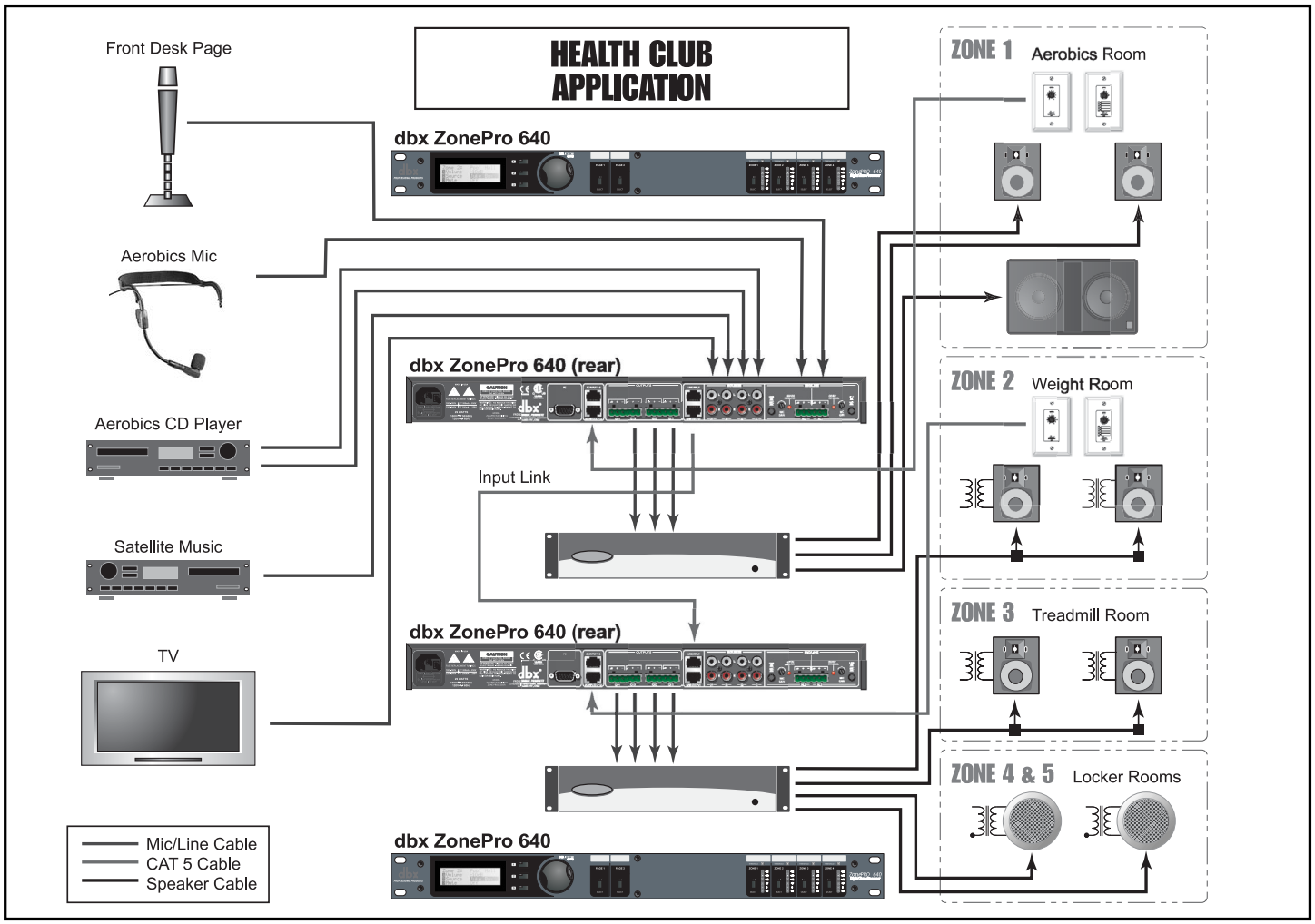


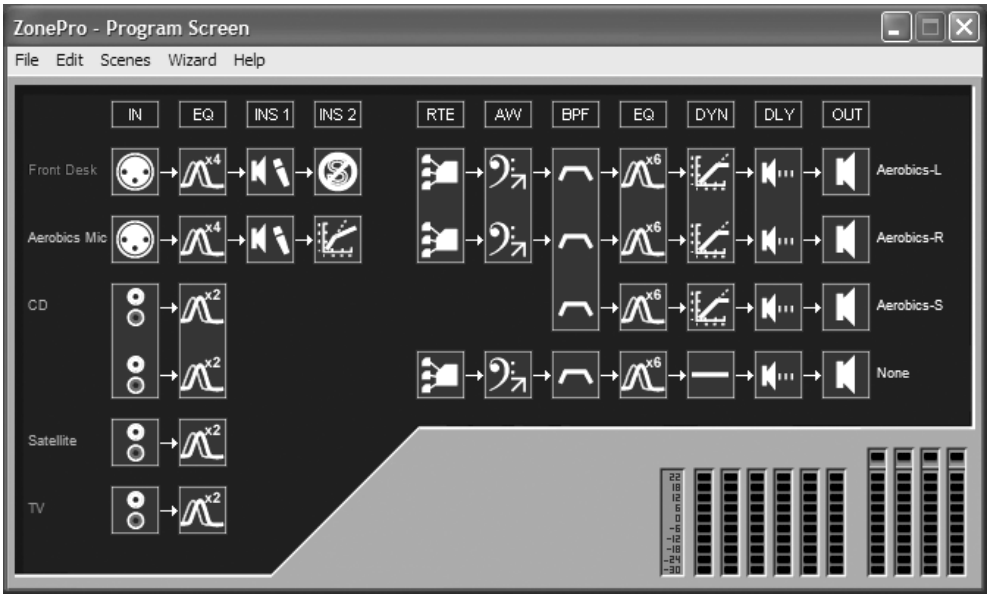


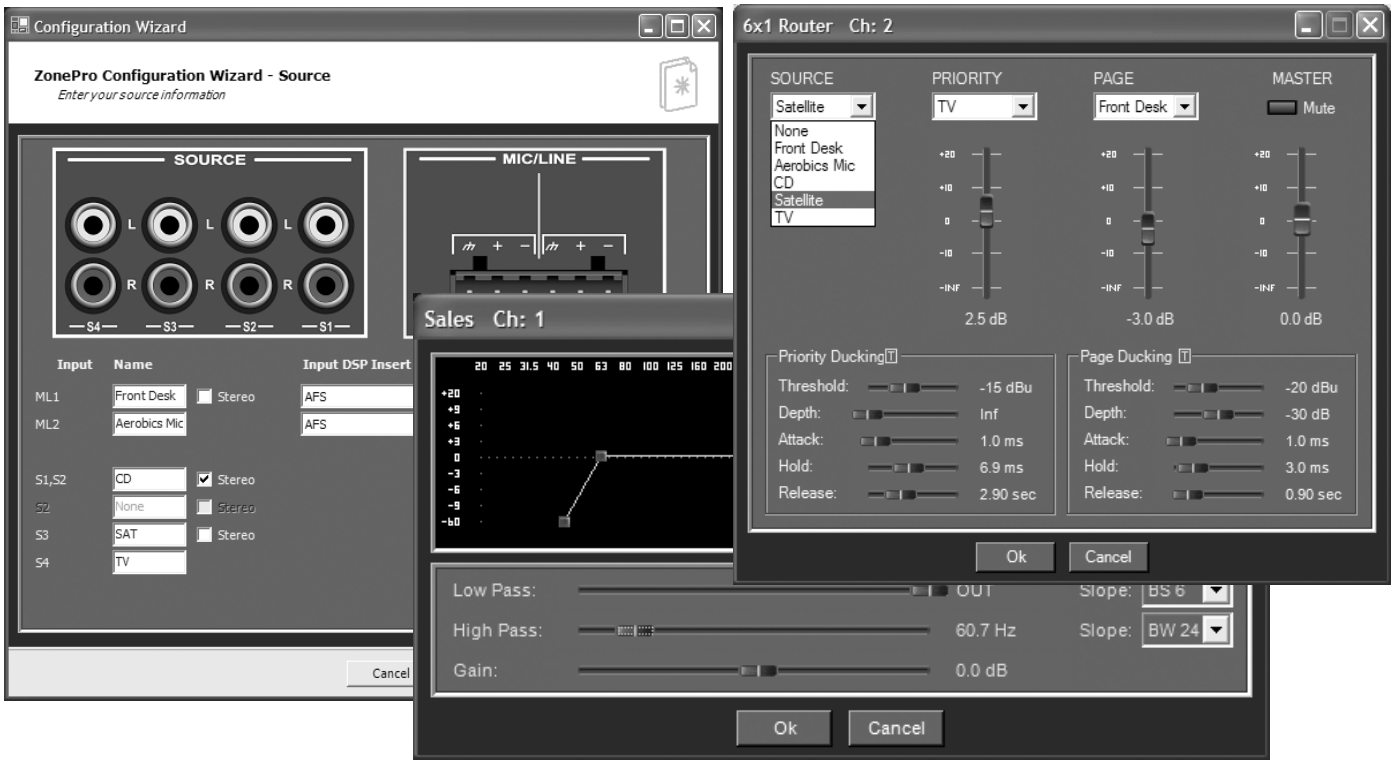
Notes - Restaurant/Bar Application

1. The ZonePro 640 is located in the manager's office and provides source selection for the waiting area.
2. Both the restaurant and the bar area have ZC controllers. The bar is using them for source selection and volume control, the ZC-1 in the restaurant is used for volume control, and the ZC-3 is used for scene changes.
3. Paging is done from the hostess station and is pre-assigned to the bar, and the waiting area.
4. The Zone Controllers for the bar and restaurant are wired with CAT5 cable in series with the bar ZC-3 and ZC-1 as ID #2, and #3, and the restaurant ZC-3 and ZC-1 as ID #1 and #4.
5. Scenes have been created that accommodate changes in the venue such as a volume boost in the bar for happy hour as well as the regular volume boost in the restaurant for the lunch time rush and the dinner crowd.
6. The ZC-3 in the restaurant is used to change between scenes as needed.
7. The Schedule function has been used to load the Rest. Boost scene automatically at the beginning of the lunch and dinner periods.
8. EQ, Feedback Suppression and Compression are used on the hostess mic to help improve intelligibility and reduce unwanted feedback in the system.
9. Limiting is used in the bar area to provide system protection.
10. AutoWarmth® is engaged in the bar to maintain the bandwidth even when the level drops, while Auto Gain Control is being used in the restaurant and waiting areas to maintain the signal level.
11. EQ is used in all zones to make the system sound as good as possible.

5.3 - Health Club Install



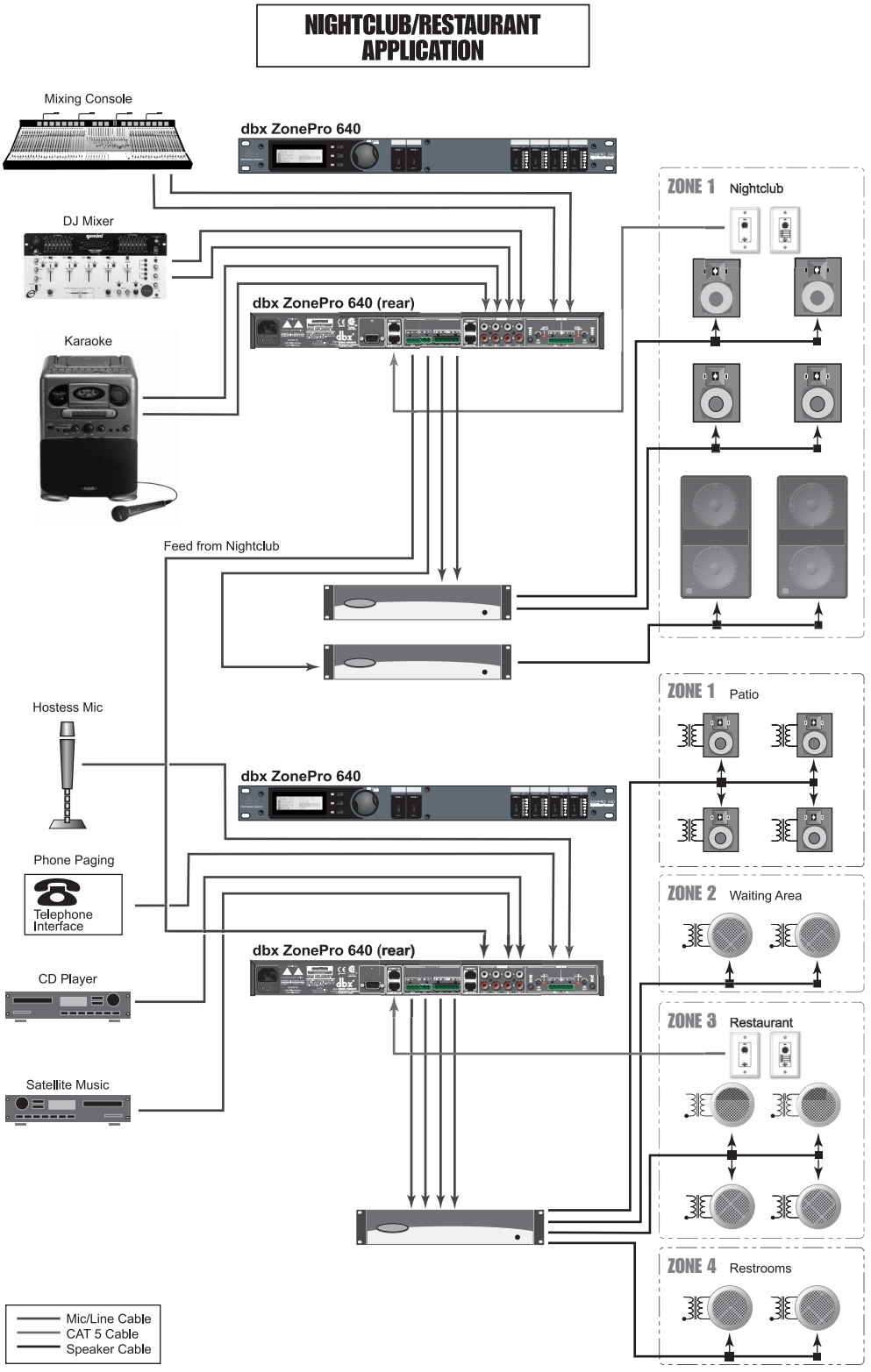


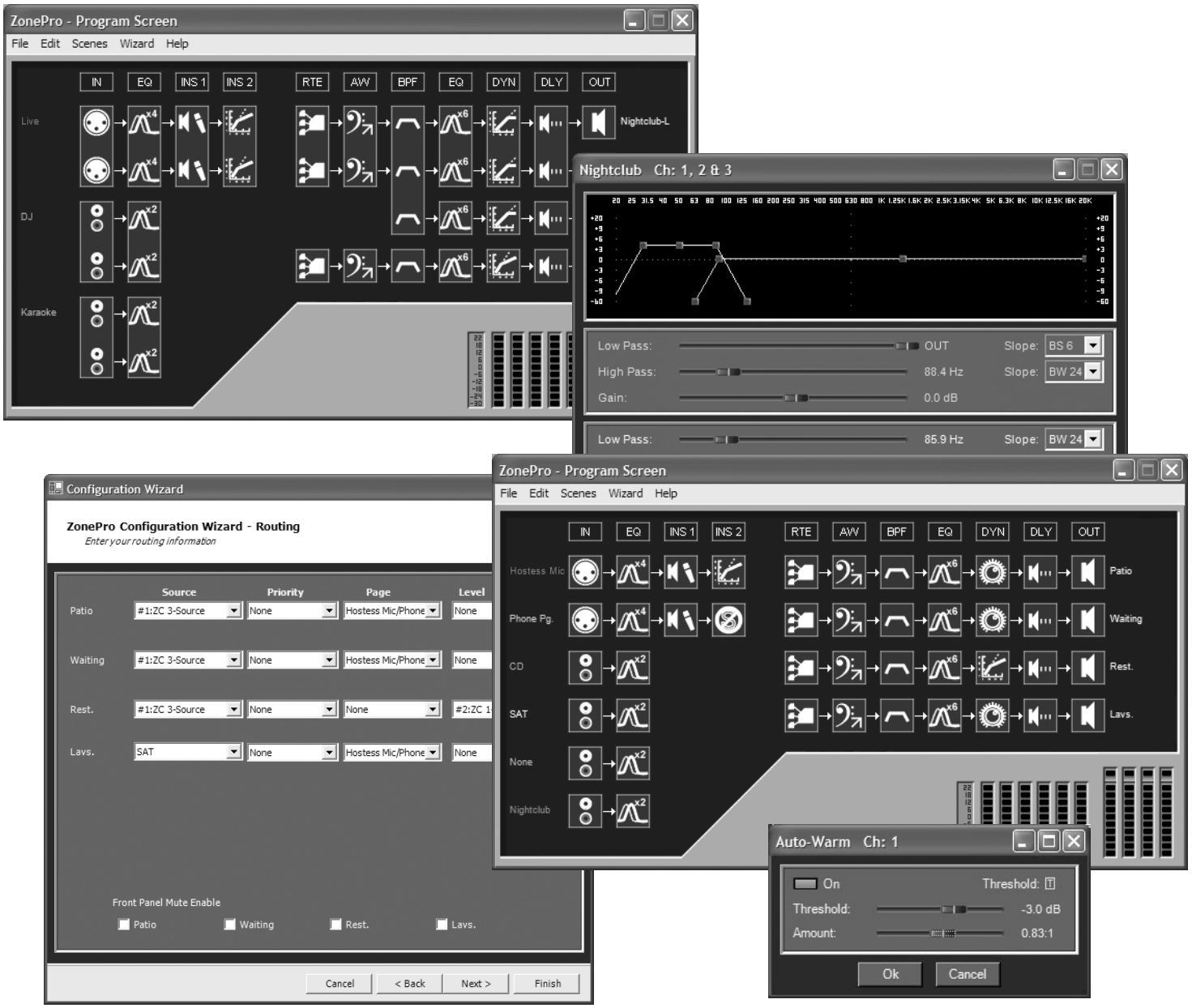


Notes - Health Club Application

1. The ZonePro 640 units are located near the front desk area.
2. ZCs in the weight room and the aerobics room allow source selection and volume control.
3. The aerobics instructor's microphone is routed only to the aerobics area as the Priority source and is simply mixed in as the priority source rather than Ducking the primary source.
4. The Input Link Buss is used to send the inputs down to the second ZonePro device.
5. The TV feed comes from the treadmill room and it is the priority source for that area overriding the primary source. Whenever the TV is on its audio is routed to the treadmill room and it can also be selected in the weight room.
6. The locker rooms always have as their primary source the Satellite Music and receive paging from the front desk.
7. Since we do not need the Aerobics Mic to be routed to any of the zones other than the aerobics room and we are using the Input Link Buss to duplicate the inputs from the first ZonePro device to the second, we could include another CD player and route it to the second mic/line input on the second ZonePro device. The ZonePro devices offer a "Local Page" facility on each of the mic/line inputs allowing selection between the sources coming in on the Buss and the local source. This would allow all the zones that are being fed by the second ZonePro device to have an additional CD source to select from.

5.3 - Night Club Install





Notes - Nightclub Application

1. The ZonePro 640 units are located in the manager's office.
2. The ZCs in the nightclub are situated near the bar and allow source selection and volume control.
3. The feed from the nightclub allows the restaurant to receive the signal from the nightclub allowing it to be sent to the entire restaurant.
4. Output Delay is used to delay the signal from the nightclub area so it arrives at the same time as the acoustic signal from the nightclub.
5. The zone controllers in the restaurant allow source selection and volume control of the restaurant area.

ZonePro™

Appendix

dbx®
PROFESSIONAL PRODUCTS

A.1 - Factory Reset/Flash Update

In the event that a reset is required, the ZonePro™ offers you the option of performing a “Soft” or “Hard” reset. The Soft Reset resets all operating parameters except user programs. The Hard Reset Procedure will reset all programmable information back to the factory defaults.

Factory ("Hard") Reset (640)

• Press and hold the **<2>** button on power-up until the following message appears in the display:

```
!:HARD RESET?
```

• Pressing the **<UTIL>** button will start a Factory Reset (All User Programs will become copies of the Factory Programs, all Utility settings will be defaulted, and all Security settings will be defaulted)
Pressing the **<PAGE I>** button will abort the Factory Reset sequence and the unit will reset normally.

Factory ("Soft") Reset (640).

• Press and Hold the **<3>** button on power-up until the following message appears in the 7-Seg Display:

```
!:SOFT RESET?
```

• Pressing the **<UTIL>** button will start a System Reset (All Utility settings will be defaulted.)
Pressing the **<PAGE I>** button will abort the System Reset sequence and the unit will reset normally.

Flash Download Update (640)

To flash update the firmware version of the ZonePro™ the unit needs to be put into Flash Update Receive mode. This is done by holding the **<I>** button while connecting power to the 640. The following message will appear:

```
WAITING FOR
FLASH DOWNLOAD
```

Once in Flash Update Receive mode it is ready to receive the new firmware.

A.2 - Specifications

Analog Inputs:

Number of Inputs:	(6 Total) (2) Switchable line or mic inputs (4) RCA Source
Connectors:	Euroblock(Line and Mic) RCA (Source)
Type:	Electronically balanced/RF filtered
Impedance:	> 50kΩ Balanced, >75kΩ Unbalanced
Max input line level:	+20dBu Mic/Line, +12dBu RCA
CMRR:	> 40dB, typically >55db @ 1kHz
Mic Pre gain:	30 to 60dB
Mic EIN:	< 118dB, 22Hz-22kHz, 150Ω
Mic Phantom Power:	15V

Analog Outputs:

Number of Outputs:	(4)
Connectors:	Euroblock
Type:	Electronically balanced, RF filtered
Impedance:	120 Ω balanced, 60Ω unbalanced
Max Output Level:	+20dBu

A/D Performance:

Type:	dbx Type IV™ conversion system
Dynamic Range line:	>113 dB A-weighted, >110 dB unweighted
Type IV dynamic range:	>119 dB, A-weighted, 22kHz BW
	>117 dB, unweighted, 22kHz BW
Sample Rate:	48kHz

D/A Performance:

Dynamic Range:	112 dB A-weighted, 109dB unweighted

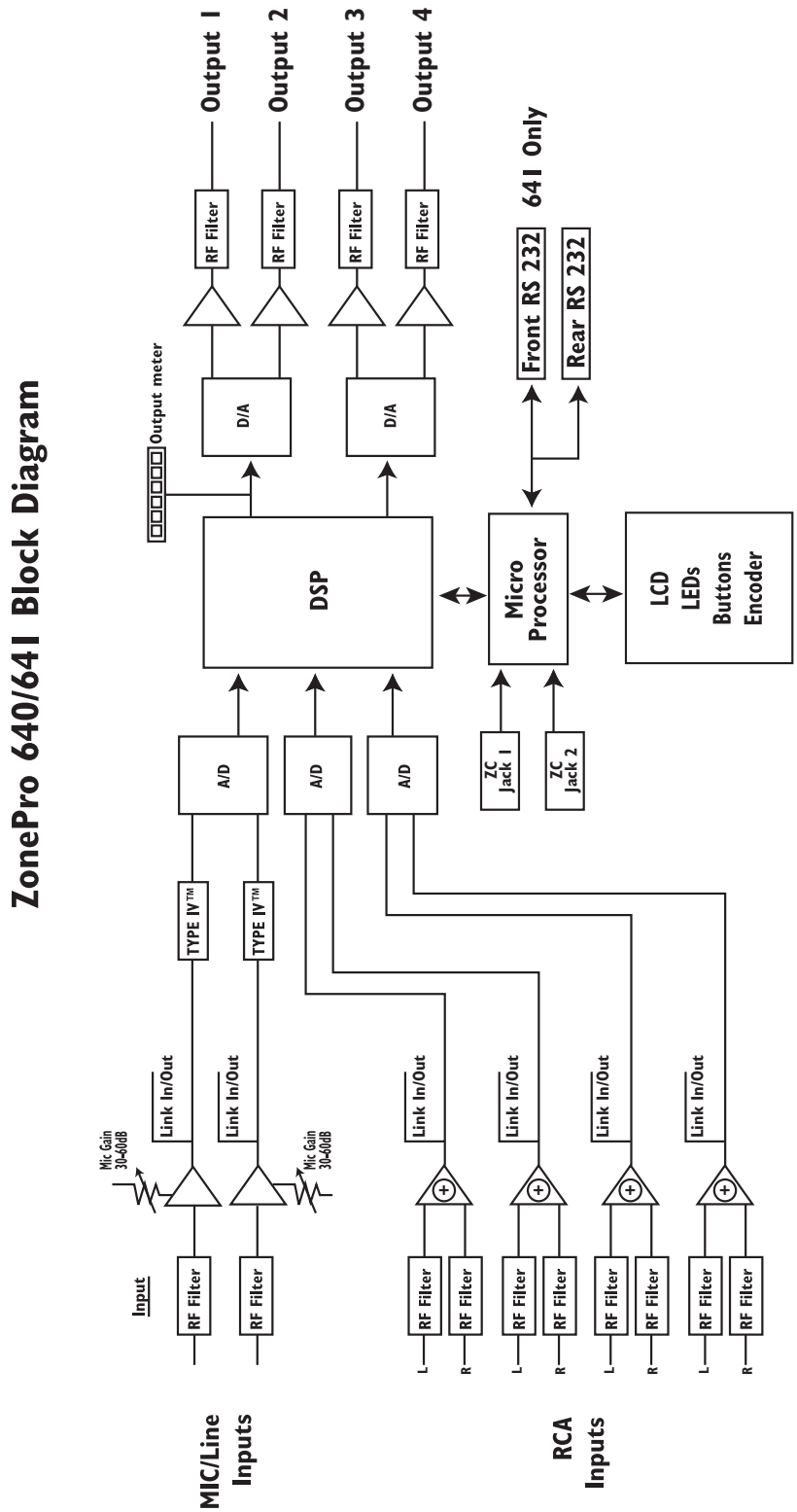
System Performance:

Dynamic Range:	>109 dB A-weighted, >106dB unweighted,
THD+N:	0.003% typical at +4dBu, 1kHz, 0dB gain
Frequency Response:	20Hz – 20kHz, +/- 0.5dB
Interchannel Crosstalk:	>80dB typical
Crosstalk input to output:	>80dB
Propagation Delay	0.6 msec
Operating voltage:	100 VAC, 50/60Hz, 120 VAC, 60Hz, 230VAC 50/60Hz
Power Requirements:	29 Watts

Physical:

Weight:	6.8 lbs.(3.1 kg) Shipping weight 8.8 lbs. (4.0 kg)
Dimensions:	1.75" H x 5.75" D x 19" W

A.3 - Block Diagram



A.4 - Link Input/Output

CAUTION: These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel. Disconnect mains power before servicing.

The link I/O connectors are used to pass program material from one box to another instead of using "Y" cables to feed multiple 640's. The link connectors are RJ45's. All 6 inputs are fed to the Link Out. The program material coming out of the Link Out has not been processed by the DSP. The input signal is routed to the LinkOut connector. And the Link In is routed to the input circuitry. With the Link Out connected to another 640/641 Link Input, both units are processing the same program material. Multiple units can be daisy chained with the Link I/O for additional outputs from a single source. The Link I/O of the RCA inputs are always active. The mic/line inputs have selection jumpers inside the unit. These jumpers can be set to enable or disable Link In and or Link Out.

P18-CH1

P16-CH2

Link Out Enabled
Link In Enabled

link Out Enabled
link In Disabled

link Out Disabled
link In Enabled

link Out Disabled
link In Disabled

A.5 - Zone Controller Wiring and Install

Zone Controller Wiring

The Zone Controllers, (ZC-1, ZC-2, ZC-3, ZC-4) can be wired serially or in parallel. To wire in series each Zone Controller must have an identification or zone number chosen using the DIP switches on the side of the controller (see diagram A). Each controller must have a unique number chosen although there may be multiple Zone Controllers controlling a single zone, or a single Zone Controller that controls multiple outputs. The Zone Controllers can then be wired together and connected to the ZonePro units (see diagram B).

The Zone Controllers may also be wired in parallel with the use of the ZC-BOB. To wire in parallel (home run cabling), each controller must have a unique identification or number chosen using the DIP switches on the rear of the panel (see diagram A). To wire in parallel, each controller must be wired into a port of the ZC-BOB with a connecting wire going to the ZonePro units (see diagram C).

Zone Controller Installation

The installation of the Zone Controllers MUST be accomplished with the use of cable which is rated VW-1 or higher. Common NEC designations which meet this rating include: CMP, CMR, CMG, CM and CMX.

ZC-1 - The ZC-1 is a programmable zone controller that allows volume level control from a wall panel.

ZC-2 - The ZC-2 is a programmable zone controller that allows volume level and mute control from a wall panel.

ZC-3 - The ZC-3 allows wall panel program selection for the ZonePro units.

ZC-4 - The ZC-4 provides contact closure program selection for room combining or fire safety applications applications.

ZC-Fire - The ZC-Fire is the interface to generic fire alarm relays. When fire alarm activates, the general purpose relay can typically be programmed to close if normally open or vices-versa. The ZC-fire interface unit monitors the state of the relay (n.o. or n.c.) and upon the state of change, notifies the Zone pro, which then mutes its outputs.

ZC-6 - The ZC-6 is an up and down controller. Because the ZC-6 uses momentary switches, it does not override the ZonePro's implantation of scheduled scene changes. The potentionmeters used in ZC2 and ZC2 would override such a pre-scheduled scene change.

ZC-7 - The ZC-7 is used for momentary Mic Zone select.

ZC-8 - The ZC-8 is used for a combination of volume up/down, and four position source/program select.

ZC-BOB - The ZC-BOB allows parallel or home run cabling of the Zone Controllers.

Diagram A

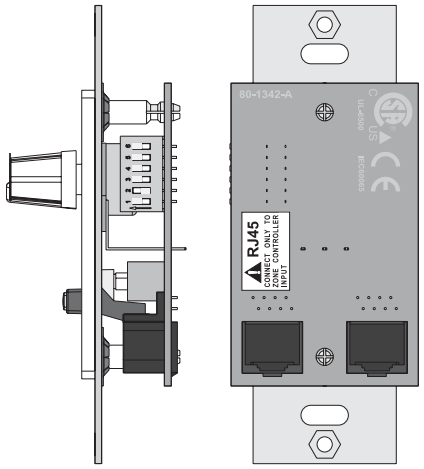


Diagram B

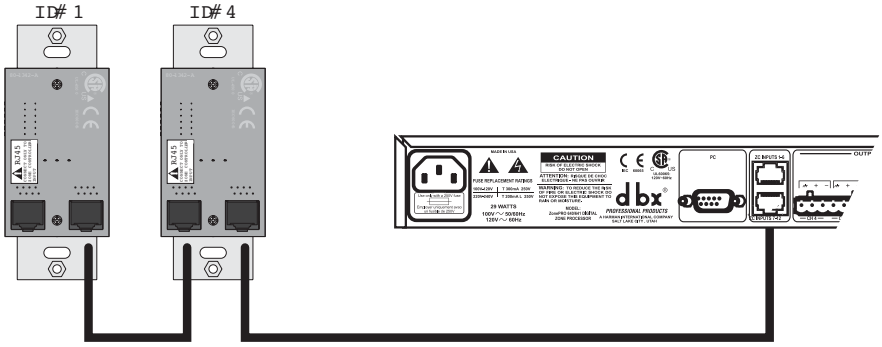
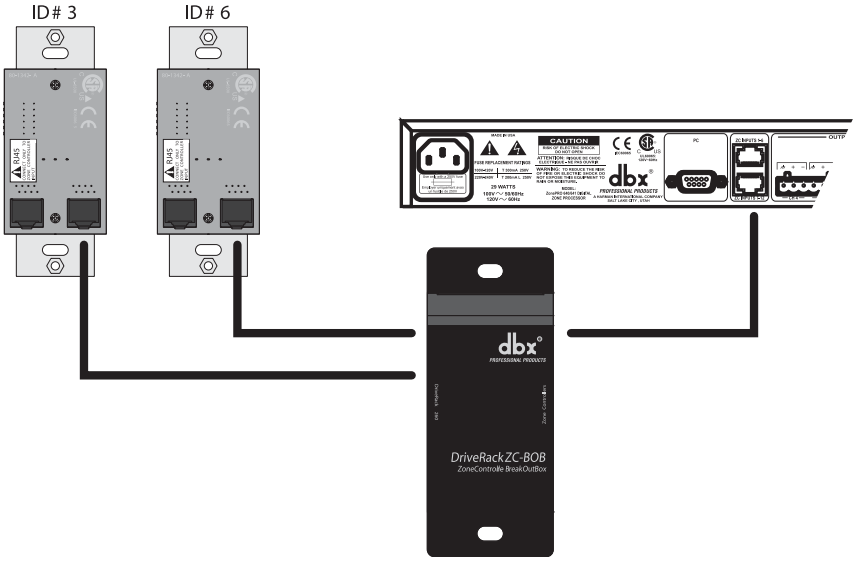


Diagram C



Cable Specification: Cat 5 Cable - 4-Twisted Pairs of 24 AWG wire

RJ-45 (8-Position)		RJ-45 (8-Position)	
1	White/Orange	1	-VREF
2	Orange	2	-Zone 1
3	White/Green	3	-Zone 2
4	Green	4	-Zone 3
5	White/Blue	5	-Zone 4
6	Blue	6	-Zone 5
7	White/Brown	7	-Zone 6
8	Brown	8	-GND

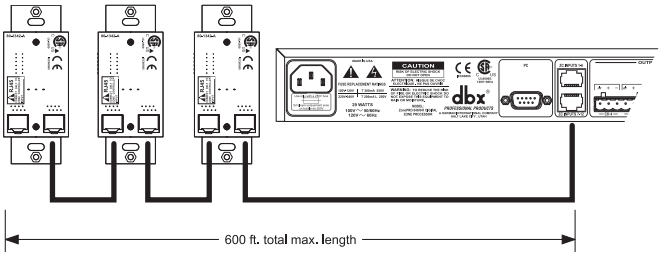


Diagram A

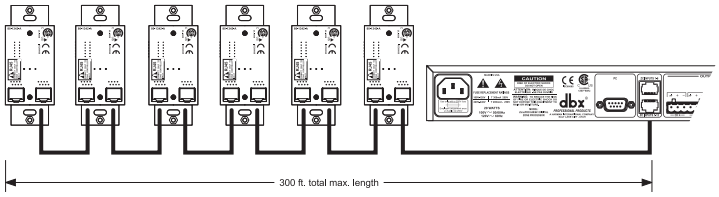


Diagram B

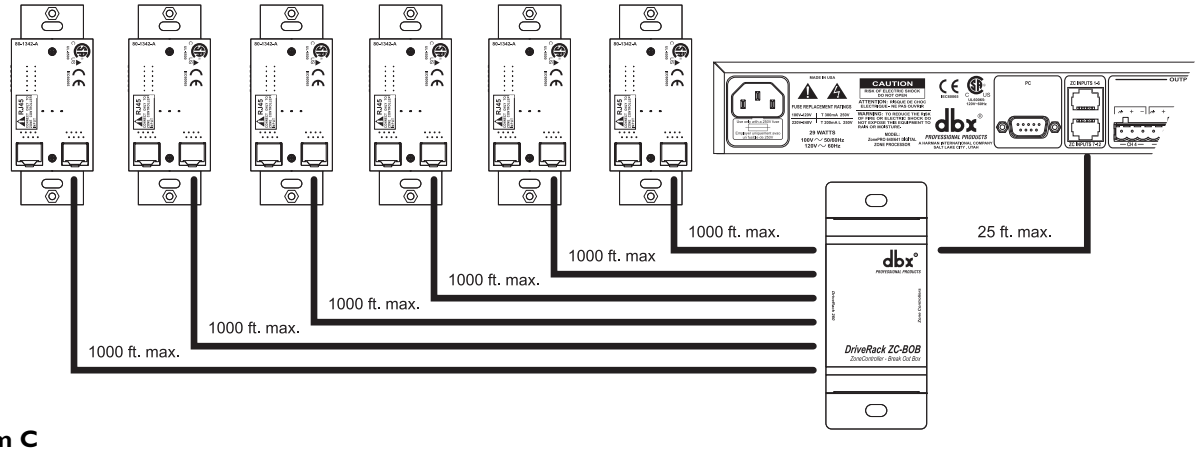


Diagram C

PROFESSIONAL PRODUCTS

8760 South Sandy Parkway • Sandy, Utah 84070
Phone: (801) 568-7660 • Fax (801) 568-7662
Int'l Fax: (801) 568-7583

Questions or comments?
E-mail us at: customer@dbxpro.com or visit our World Wide Web home page at:
www.dbxpro.com

A Harman International Company

18-0282-A